

Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVI

CHICAGO, ILL., JULY 7, 1915.

Number 5.

The Woodville Lime and Cement Co.



A few of the many buildings

Polar Bear Alca Stucco--Enamel Alca Plaster--Mason's Alca

For Exterior Stucco Work.

For Interior Plastering.

For Brick and Tile Work.

Architects, Plasterers and Dealers

Like It for 16 Reasons

1. Absorbs and deadens sound, making a quiet building.
2. Will carry four to five parts of sand.
3. Spreads very easily, can be applied with less effort and cover more wall in a given time.
4. Increases in strength with age.
5. Is protective of metal lath, having no corrosive action.
6. Has good adhesion to concrete walls.
7. Can be used for either interior or exterior work.
8. Not injured by freezing.
9. Unharmd by leakage from roof or plumbing.
10. Can be retempered; droppings can be worked over easily.
11. Can be easily straightened and darbied on the wall.
12. Can be mixed the day before and work done in the afternoon can be floated and finished next morning.
13. Is not injured by storage.
14. Is lower in cost to the owner and plasterer.
15. Its natural color is pure white.
16. Needs no addition but sand and water.

WOULD YOU LIKE OUR BOOKLET?

The Woodville Lime & Cement Company,

1340-50
Nicholas Bldg.

Toledo, Ohio





Bag Bundler

IT COUNTS 'EM AND
BUNDLES 'EM

Saves Time
Eliminates Errors

A few of our many customers say:

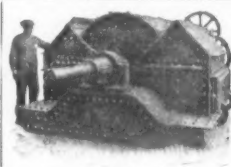
"It does the work of three men."
"Will shortly order three more."
"Would not take three times what we paid for it."
"It is a wonderful money saver."

Write for prices

**The Faerberhill
Manufacturing Co.**

1392 East 40th St., CLEVELAND, O.

Agents wanted in every city. A side line for machinery and builders supply salesman.



"PENNSYLVANIA"

Hammer Crushers For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc.

Main Frame of Steel, "Ball and Socket" self aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running.

No other hammer Crusher has such a big Safety Factor.

Pennsylvania Crusher Co.

New York

PHILADELPHIA

Pittsburgh

Clinton Mortar Colors

for over 30 years have stood as the highest standard of durability and excellence—warranted not to fade.

CLINTON METALLIC PAINT CO., Clinton, N. Y.

Daily Capacity
7000 Barrels



The Quality
Cement of the
Middle West

MORE THAN FIFTEEN YEARS OF SATISFACTION

THREE PLANTS: ALPENA — DETROIT — WYANDOTTE

HURON AND WYANDOTTE

Water and Rail Facilities Best Serve the
Entire Middle West

EVERY BARREL TESTED AND GUARANTEED. SOLD BY THE BEST DEALERS EVERYWHERE

Main Office: 1525 Ford Bldg., Detroit, Michigan

Daily Capacity
3000 Barrels



The Leading
Concrete
Cement



Beautiful Houses from Illinois to
Massachusetts are Roofed
with Reynolds Flexible
Asphalt Shingles

A multitude of pretentious residences in a score of states are giving ample proof of the long-lasting surface of Reynolds Flexible Asphalt Shingles.

Every type of modern home can be protected and beautified, at lower cost, with these time-

tried, weather-tested shingles. They withstand the ravages of driving rain, pelting hail, hottest sun and heaviest snow without warping, cracking, splitting, curling or blowing off. Sparks cannot set them of fire. Long Exposure cannot dull their rich color. Adaptable to every style of pitched roof, and make possible unusual architectural effects, such as roll edges, thatch effects and rounded corners.

Reynolds Asphalt Shingles

Guaranteed for 10 years—will wear many years longer—
Write for liberal agency proposition.

Rough-surfaced weather defiers made of crushed slate or granite securely embedded in pure Asphalt. Natural colors of garnet, red or gray-green which never fade and never need painting. We are the original makers of flexible asphalt slate shingles and tested them for ten years before putting them on the market. They are uniform in size—8 ins. by 12½ ins.—and are laid 4 ins. to the weather. Easily and quickly laid.

Let us send you a booklet showing photographs of modern houses roofed with Reynolds Asphalt Shingles. Write for a copy TODAY.

H. M. REYNOLDS ASPHALT SHINGLE CO.
Original Manufacturer Grand Rapids, Mich.
Established 1868 Members of National Builders' Supply Association

Wheeling Wall Plaster Co.

WHEELING, W. VA.



The Building Material
Supply House of the
Ohio Valley

CAR LOADS AND LOCAL SHIP-
MENTS AT WHOLESALE PRICES

Try Our Service

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS





United States Custom House and Postoffice, Omaha, Neb
KALLOLITE PLASTER USED

Kallolite Cement Plaster

Was used on the Omaha Post Office, as well as many other

Government and Public Buildings.

Kallolite Cement Plaster is manufactured from the Purest Gypsum Rock found in the United States as shown by last Government Report.

CARDIFF GYPSUM PLASTER CO.

✉ Write for literature.

FT. DODGE, IOWA



About Bakup and Partition Tile—

You ought to handle our 4x5x12 and 5x8x12 BAKUP TILE made from high-grade "Ohio" fire clay. We have a nice stock from which to make prompt shipments.

You can also get PARTITION TILE from us in sizes 3x12x12 up to 12x12x12.

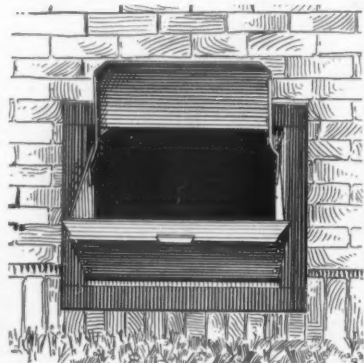
One shipment from us will easily convince you that our material is what you ought to handle.

Write us for prices, etc.

**THE
METROPOLITAN PAVING BRICK COMPANY**
Canton, Ohio

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

Kewanee ^{All Steel} Coal Chutes



Boost Your Profits

They are absolutely the best protection for the coal room window on the market—constructed entirely of boiler steel, they cannot break.

You can easily sell them to the building trade and boost your profits. What's more, our co-operative advertising plan helps you do this.

Write for our agency proposition today.

Kewanee Mfg. Co.
Kewanee Illinois

SEWER PIPE

ALSO

Hollow Building Blocks

Roofing Slate

Face Brick

Pearl Hydrated Lime

Other Fire Clay Products

Builders' Specialties

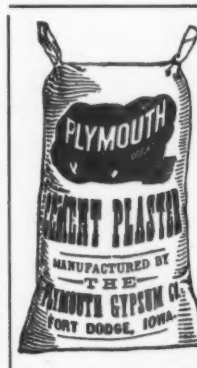
PRICES ATTRACTIVE

HOUSTON BROTHERS COMPANY
PITTSBURGH, PA.



PLYMOUTH CLAY PRODUCTS CO.

FORT DODGE, IOWA



PLASTER WOOD FIBER PLASTER

Fireproof Partition Blocks

Sackett Plaster Board

Steel Studding

Known as Brands of Quality

WRITE US

PLYMOUTH GYPSUM CO.
FORT DODGE, IOWA

NORTH-WESTERN PORTLAND CEMENT



The Reliable Portland Cement

A Portland Cement for the
NORTHWEST

**North-Western States Portland
Cement Co.**
MASON CITY, IOWA



Dealers Everywhere—

YOU SHOULD HANDLE Monarch Brand Hydrated Lime

Because it's the only perfect Hydrated Lime and you can get increased business by recommending it. It's uniform. It's fine. It won't "blister" or cause "chip cracks" and "crazing."

You get the benefits of Monarch advertising service. You get the business that others are getting now.

Don't neglect this chance to increase your lime sales.

Ask us how we can help you sell Monarch Hydrated Lime. Write us that you want to be a "Monarch" man.

National Lime & Stone Co.
CAREY, OHIO

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS



Costs Less Because of Labor and Material It Saves

Sykes Expanded Cup Metal Lath, by saving furring strips saves money to owner and contractor. It is **Stronger, Heavier and Better** than other metal laths, because the strands are **wider**. Therefore, the lath weighs more when cut from the same gauge metal. Judge metal lath by **weight and gauge**, not by gauge alone.



Expanded Cup Lath

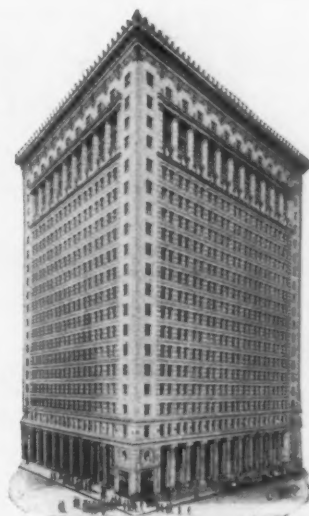
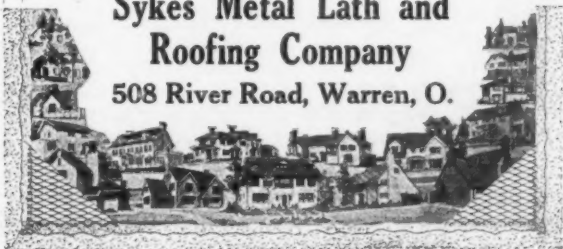
Self Furring

is best for interior or exterior work. No furring strips. So crimped as to make a perfect key for mortar. Makes itself a backbone of everlasting strength.

Endorsed by architects. Approved by U. S. Government for Post Office work.

Free Book and Sample. Book gives complete specifications for Stucco Work on Metal Lath—it will save you money. Write for it, addressing—

Sykes Metal Lath and Roofing Company
508 River Road, Warren, O.



Peoples Gas Bldg.
Chicago

Marquette Portland Cement has been used in most of the big buildings erected in Chicago; it has been used in important concrete construction throughout the Middle West.

The engineers, architects and contractors who used Marquette in this important work knew they could depend on Marquette service and quality; you can also depend on it.

Marquette Cement Mfg. Company
1335 Marquette Building Chicago



It is a fact that the contractors who are using the most "CHICAGO AA" Portland Cement, are the ones who have been using "CHICAGO AA" longest.



The permanent plaster for interior walls. May be retempered as often as necessary. Makes a perfect bond on concrete, brick, tile or lath.

**Best Bros.
Keene's Cement**
The Plaster That Stands
Hard Knocks

The Best Bros. Keene's Cement Co.
Established 1889
Dept. A, MEDICINE LODGE, KANSAS
New York—Chicago

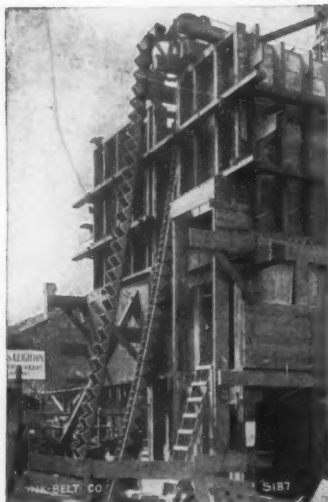


Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

LINK-BELT MACHINERY

is designed and built for speed and economy in elevating and conveying all kinds of material for

Contractors and Producers



Contractors Equipment

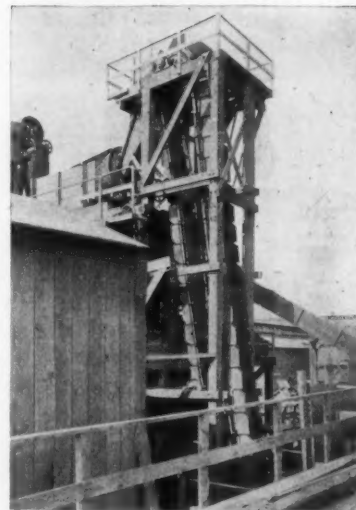
A single strand Ley chain continuous bucket elevator, used by Irwin & Leighton, Philadelphia.

The saving over manual labor is very apparent, yet it is a modest equipment which can be used just as effectively by the small contractor.

Producers Equipment

Built for large capacity at slow speed, and long life.

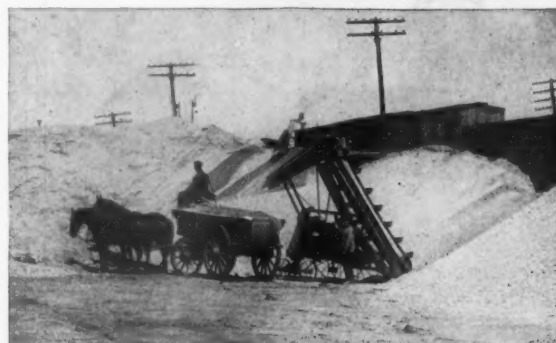
Continuous elevator, handling 300 tons per hour, consisting of 30-inch buckets attached to 2 strands of 24-inch pitch chain, and discharges to a rotary screen. Note the absence of tracks. The chains are guided by large flanged rollers.



**We Plan and Build Complete
Your Entire Conveying Equipment**



Link-Belt Car Unloader, Stationary Type—With two men trimming to the foot of the bucket elevator in the car, this outfit replaced six shovelers formerly required to unload the material.



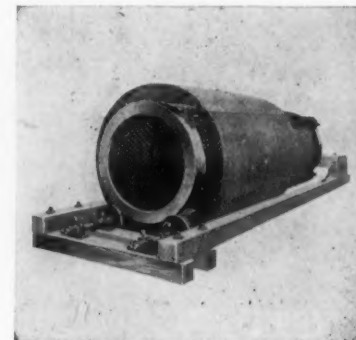
Link-Belt Portable Wagon Loader—Loads stone, sand, gravel, etc., at the rate of one ton per minute. Catalog on request.



Belt Conveyor for Stone—Write for Catalog 79



Cement Bag Elevator



Revolving Screen

LINK-BELT COMPANY

PHILADELPHIA

New York.....209 Broadway
Pittsburgh.....1501 Park Building
Boston.....49 Federal St.
St. Louis.....Central Nat'l Bank Bldg.
Buffalo.....698 Ellicott Square
Wilkes-Barre.....2nd Nat'l Bank Bldg.

CHICAGO

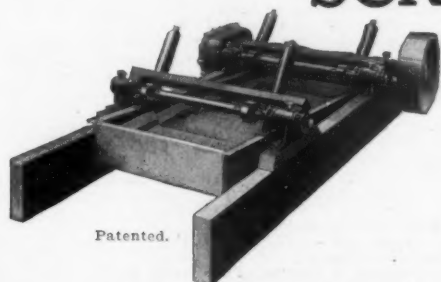
Detroit.....911 Dime Bank Bldg.
Cleveland.....1304 Rockefeller Bldg.
Seattle.....580 1st Ave. South
Los Angeles.....204 N. Los Angeles St.
Denver.....Lindrooth, Shubart & Co.
Minneapolis.....Link-Belt Supply Co.

INDIANAPOLIS

New Orleans.....Whitney Supply Co.
San Francisco.....N. D. Phelps, Sheldon Bldg.
Birmingham.....General Machinery Co.
Brantford, Can.....Waterous Eng. Works Co.
Portland, Ore.....14th and Lovejoy Sts.
Toronto, Can.....Can. Link-Belt Co., Ltd.

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

SYMONS PULSATING SCREENS



Patented.

for
**Rock
Gravel
Ore**

One 24"x7'-0"

With 4 perforated plate sections, $1\frac{3}{8}$ " holes, taking $3\frac{1}{2}$ " feed screens out, all 1" and under and handles 30 tons per hour.

One 36"x5'-3"

With 1" perforations handled 55 tons per hour
With $\frac{3}{4}$ " perforations handled 44 tons per hour
With $\frac{1}{2}$ " perforations handled 38 tons per hour

Manufactured and Sold Only by

Chalmers & Williams

1450 Arnold St.

Chicago Heights, Ill.

Chicago Office: Edison Bldg.

New York Office: Equitable Bldg.

Large Crushing Tonnage

On All
Kinds of Rock

Any or
All the Time

High Efficiency

Correct Design

SIZES
No. 1 to No. 10

CAPACITY
5 to 500
Tons P. Hr.



Traylor Gyratory Crushers

are of the most modern and up-to-date type gyratory on the market and contain superior features such as:

SHAFTS—proven by severest operation to be correctly designed;

SUSPENSION—at point of least gyration;

ECCENTRIC BEARING—of extra large area;

ACCESSIBILITY—for dismantling;

POSITIVE LUBRICATION; and CAST STEEL GEARS.

Above features constitute a few of the many TRAYLOR FEATURES that reduce the cost of up-keep to a minimum.

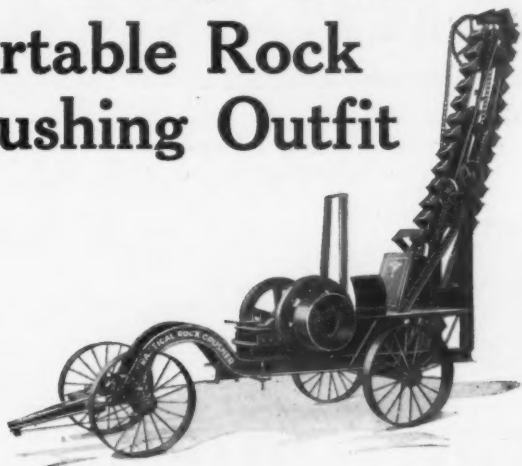
Catalog "G-2" describes our Gyratories. Send for it.

Traylor Engineering & Mfg. Co.

Main Office and Works: Allentown, Pa.

New York Office: 24 Church St. Western Office: Salt Lake City, Utah

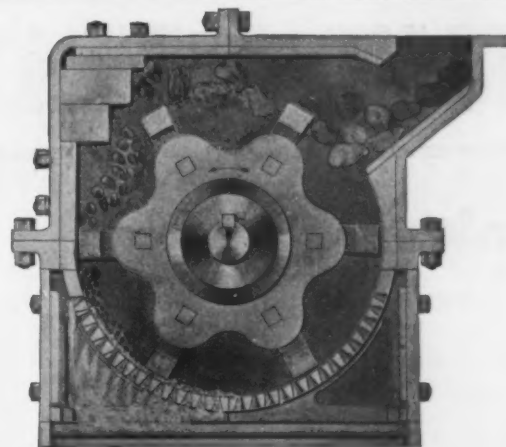
Advantages of Our Portable Rock Crushing Outfit



The Elevator is 16 feet long (Standard length)—and is typical of "Webb City," as there are no other elevators on the market that are similar. The elevator does not fold, but is laid back over the crusher by means of a worm and gear arrangement, thus eliminating the old troublesome points of the folding type. Another important feature is the distance from the ground to the feeding platform—only 48 inches on most of these crushers—this being approximately a foot lower than on any others.

Webb City & Carterville Foundry & Machine Works

Main Office: WEBB CITY, MO.



K-B PULVERIZER ALL STEEL

*Manganese Steel Linings, Adjustable Hammers,
Readily Removable Screens*

Large Capacity
Low Power

Economical
Efficient

Designed for Service and Durability

Write for Bulletin Today

K-B Pulverizer Company, Inc.

86 Worth St., New York City

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

BOOKS FOR THE TRADE

Cement Users

Portland Cement for Users
Henry Falja and D. B. Butler. Price \$1.20. C
Cements, Mortars and Concrete
Myron C. Falk. Price \$2.50 C
Reinforced Concrete
W. H. Gibson and W. L. Webb. Price \$1.00. C
Hand Book of Cost, Data
Halbert P. Gillette. Price \$5.00. C
Concrete Construction
H. P. Gillette and C. S. Hill. Price \$5.00. C
Cement Workers' and Plasterers' Ready Reference
H. G. Richey. Price \$1.50. C
Reinforced Concrete
A. W. Buel and C. S. Hill. Price \$5.00. C
Concrete
Edward Godfrey. Price \$2.50. C
Reinforced Concrete
C. F. Marsh and Wm. Dunn. Price \$7.00. C
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W. Patton. Price \$5.00. C
Concrete
Thomas Potter. Price \$3.00. C
Cement and Concrete
Louis C. Sablin. Price \$5.00. C
Concrete and Reinforced Concrete Construction
Homer A. Reid. Price \$5.00. C
Handbook on Reinforced Concrete
F. D. Warren. Price \$2.50. C
Popular Handbook for Cement and Concrete Users
Myron H. Lewis & A. H. Chandler. Price \$2.50. C
A Manual of Cement Testing
Richards & North. Price \$1.50. V
A Treatise on Cement Specifications
Jerome Cochran. Price \$1.00. V
Manual of Reinforced Concrete and Concrete Block Construction
Chas. F. Marsh and Wm. Dunn. Price \$2.50. V

Cement and Lime Manufacturers

Bungalows, Camps and Mountain Houses
Price \$2.00. C
Limes, Cements and Mortars, Concretes, Mastics, etc.
G. R. Burnell. Price \$0.60. C
Instructions to Inspectors on Reinforced Concrete Construction
Geo. P. Carver. Price \$0.50. C
Cements, Limes and Plasters
Edwin C. Eckel. Price \$6.00. C
Practical Treatise on Limes Hydraulic Cements and Mortars
Gen. Q. A. Gillmore. Price \$4.00. C
Mortars, Plasters, Stuccos, Concretes Portland Cements and Compositions
F. Hodgson. Price \$1.50. C
Concrete Factories
Robert W. Lesley. Price \$1.00. C
Portland Cement; Composition.
Richard K. Meade. Price 4.50. C
Manufacture of Concrete Blocks
Wm. M. Torrence and others. Price \$1.50. C
Practical Cement Testing
W. Purves Taylor. Price \$3.00. C
Foundation and Concrete Works
E. Dobson. Price \$0.60. C
Reinforced Concrete. Mechanic and Elementary Design
John P. Brooks. Price \$2.00. C
Concrete and Stucco Houses
O. C. Hering. Price \$2.00. C
Concrete Costs
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Theory of Steel-Concrete Arches and Vaulted Structures. Wm. Cain. Price \$0.50. C
Concrete Country Residences. Price \$1.00. C
Graphical Handbook for Reinforced Concrete Design
John Hawkesworth, C. E. Price \$2.50. C
Theory and Design of Reinforced Concrete Arches
Arvid Reuterdahl. Price \$2.00. C
Treatise on Concrete, Plain and Reinforced. F. W. Taylor and S. E. Thompson. Price \$5.00. C
Concrete Steel. W. N. Twelvrees. Price \$1.90. C
General Specifications for Concrete Work as Applied to Building Construction
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Building Superintendence
Edward Nichols. Price \$1.50. C
Hollow Tile House. Squires. Price \$2.50. C
Rock Excavating and Blasting
J. J. Cosgrove. Price \$2.50. J J C
Estimating and Contracting
W. A. Radford. Price \$2.00.
Brick Houses
W. A. Radford. Price \$1.00
Cement Houses
W. A. Radford. Price \$1.00.
Cement and How to Use It
W. A. Radford. Price \$1.00.

ROCK PRODUCTS AND BUILDING MATERIALS 537 S. DEARBORN STREET CHICAGO

THE BELDEN BRICK CO.

Incorporated 1893

Sales Offices:

CANTON, OHIO



FIVE MODERN FACTORIES

producing practically every color and texture of Face Brick put us in position to take care of the dealer to the best possible advantage. It will pay you to have our samples and prices. Write now.

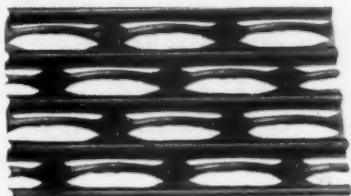
FACTORIES:

Canton, O. Somerset, O. Port Washington, O. Uhrichsville, O. Tuscarawas, O.

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

THE "BOSTWICK" LINE OF BUILDING METAL GOODS

Is Inclusive—"From the Walls to the Trim"—



Metal Lath:—"Bostwick Truss-Loop" Metal Lath, for both exterior and interior plastering, gives double the weight and strength of re-enforcement to that in general use, enabling studdings and joints to be placed 16" or 20" or 24" on centers, reduces cost of framing, shows lowest cost of finished plastered surface of any metal lath.

ANOTHER "BOSTWICK" LEADING LINE

Get a Line on "Bostwick Dealers Service"

THE BOSTWICK STEEL LATH CO., Niles, Ohio

BRICK—The Old Way of Handling Them is a Nuisance

In tossing brick out of a car many are broken. A wheelbarrow doesn't carry enough bricks to warrant the time it takes to load, wheel it out and dump it.



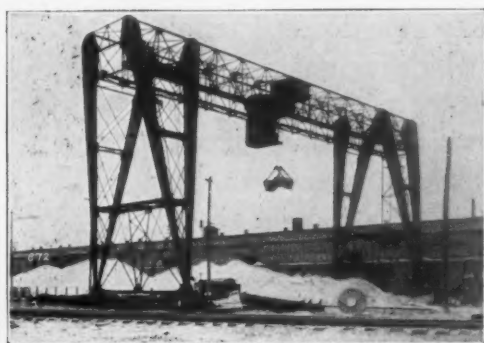
Use a CLEVELAND BRICK CLAMP

It is the Newest and Quickest Way

Furthermore, in unloading brick it actually saves ONE-THIRD of the time over the old methods. This clamp is adjustable and will carry from FOUR to TWELVE bricks. There's no fuss or bother. Simply place the clamp down on the bricks and lift the handle.

The price? It is so inexpensive ANYONE can afford it. Just send your name on a postal and we'll send a neat catalog and price list.

THE P. D. CRANE COMPANY, 10201 Harvard Avenue, Cleveland, Ohio



Special Sand Handling Gantry Crane built for the Edward Ford Plate Glass Company, Toledo

SOLVING THE PROBLEM

of how to handle your raw materials in the quickest, cheapest and best manner is easily accomplished if you do it the

"McMYLER INTERSTATE WAY"

Our engineers are ready to co-operate with you and show you how. It is a real service in which they take considerable pride, and it is yours for the asking.

The McMyler Interstate Company Dept. P-2 Cleveland, Ohio

Products—Locomotive Cranes—All type of Buckets for every purpose—Elevating and Conveying Machinery, etc.

New York

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Chicago

Robert W. Hunt

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Jas. C. Hallsted

D. W. McNaugher

Robert W. Hunt & Co., Engineers

Bureau Of

INSPECTION TESTS AND CONSULTATION

General Offices

TESTS OF PAVING BRICK

2200 Insurance Exchange, Chicago

SEND FOR OUR BOOKLET "B"

THE METROPOLITAN PAVING BRICK COMPANY

Manufacturers of "BEST PAVING BLOCK MADE"

CANTON

OHIO

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

Said One Dealer to Another (Names on Request)

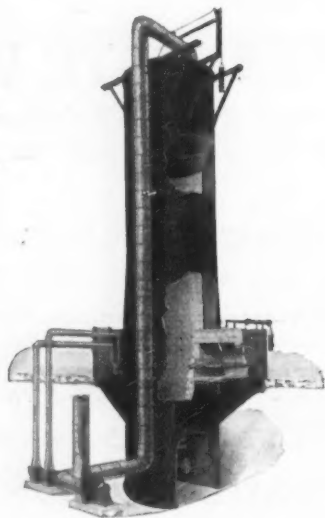


"THIS old town, for generations, possibly, had gone upon the principle that nothing but barrel or lump lime could be used for white coat purposes, and our trade was a bit skeptical about changing, I assure you. However, all doubts have been removed long since, and I may truthfully state that *Tiger* has completely superseded barrel lime. Our trade has been surprisingly gratifying during the busy season, running to a car weekly.

Assure your trade that the smooth, cool working qualities are of the finest, and in addition they never again need fear those contemptible pips and pops that show so readily from unslaked particles in the old method of so-called slaked limes."

The Kelley Island Lime & Transport Co.
CLEVELAND, OHIO

Doherty-Eldred Lime Kiln



The Improved Equipment Co.

COMBUSTION ENGINEERS

60 Wall St., New York City

Complete Coal Gas Plants
Complete Lime Burning Plants
Gas Producers

Lime Kilns
Special Industrial Furnaces
Refractory Materials

A Dealer's Trade Is His Child

To him it must look for guidance and information. On him it relies for protection.

Just as a child properly cared for will repay many times over the trouble and expense lavished on it—so a dealer's customers, if honestly and conscientiously supplied with the best in service and materials, will finally become an invaluable asset.

A customer is apt to measure a dealer's whole line by the one particular feature with which he is familiar. People all over the nation are coming to know that the cement best for their requirements is

LEHIGH CEMENT

MILLS:

Ormrod, Pa., West Coplay, Pa., Fogelsville, Pa., New Castle, Pa., Mitchell, Ind., Mason City, Ia., Metairie, La., Wash.

OFFICES:

Allentown, Chicago, Spokane, New York City, Philadelphia, Boston, Minneapolis, Savannah, Des Moines, New Castle.

12 Mills—Annual Capacity Over 12,000,000 Barrels

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

JUL 7 1915

Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVI.

CHICAGO, JULY 7, 1915.

Number 5.

PUBLISHED SEMI-MONTHLY.

DEVOTED TO

Quarry Products, Cement, Lime, Plaster, Sand and Gravel, Clay Products and Building Specialties—Fireproof Building and Road Construction.

THE FRANCIS PUBLISHING COMPANY.

EDGAR H. DEFEBAGH, Prest.

Seventh Floor, Ellsworth Bldg., 537 So. Dearborn St., Chicago, Ill., U. S. A.
Telephone: Harrison 8086, 8087 and 8088.

EDITORS:

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Why should anyone be reluctant to admit that business is really better than expectations so far?

Better prices and steady conditions of demand for Portland cement are the best index of the building material business.

Rough cast and pebble dash surface effects that have developed into such great popularity in recent years have made good in many ways. Amongst others is the improvement with age and the splendor of clinging vines to the color scheme.

Reinforced concrete for factory and hotel construction is now established as the only sane way to build such things. The next step of importance is to protect the home and the farm house in the same sensible way. It is not a really hard thing to do. Go to it.

It is all bosh to agitate a merchant marine without a whole code of marine laws compatible with the successful conduct of maritime business. Norwegian and Dutch sailors know more about the carrying game than any American will ever acquire during this century.

Improvement in the equipment of sand reclaiming and washing operations has been an important factor in the betterment of concrete. With wider experience it has been found that the perfection of concrete is better accomplished by the route of using high-grade aggregate than in any other way. Good, clean sand in every concrete mixture is fully as important as the cement where an unexcelled product is essential or desired.

The two expositions commemorative of the completion of the Panama canal, both on the Pacific coast, are enjoying very profitable patronage. The weather conditions are ideal and the overland trips that automobile parties have made to and from the fairs are almost beyond belief.

As soon as the great European armies are disbanded there will be an unprecedented rush of immigrants to this country. Very few of the soldiers of today will be found sufficiently patriotic to care to work out their lives in paying war indemnities. This may develop the opportunity for a readjustment and improvement in the labor status and so contribute a further tangible benefit to this country.

Consumption of crushed rock increases more rapidly than is the case with any other product. As yet there is but a suggestion developed of what the near future will require. The material itself is cheap enough—too cheap, in fact, in many instances—but cost of delivery is altogether too much in comparison with the price of material. Nearly always the freight costs more than the material; in one recent case the freight was four times the cost of material. Perhaps there is another chapter of railroading knowledge yet to be born. The freight item of Eastern crusher operations usually carried in barges is insignificant in comparison to railroad rates.

The Interstate Commerce Commission having put the railroad-owned steamships out of business on the Great Lakes after the present season, it will be up to the Simon-pure mariners of the lakes to demonstrate their efficiency in carrying the very large tonnage of our internal sea. With the New York barge canal at one end and the connection with the Mississippi river across the Illinois divide at the other, the impetus to water-borne tonnage will be very great. Western shippers have long been educated to use railroads exclusively and it will probably be a long time before they can accumulate the education in this regard that Eastern business men have always used with great effect.

Auto trucks for the delivery of building materials have simplified a great many of the long hauls, but there are still many places where the team is indispensable for the dealer with a long order file. The higher valuation of good teams and the war-time prices of hay, oats and corn make the team cost an item of ever-growing dimensions. It is advisable in such times as these to dispense with every possible team and replace the same with an auto truck, because your auto truck does not have to be fed on Sundays or holidays or during the uncertain periods of strikes in the building trades, which seem to have become an inseparable part of the ornamental trimmings in the outfit of all of the large cities in this country. There is a ready sale for all of the surplus horses, and at the prices they are bringing the proceeds from a couple of good teams of horses will buy an auto truck which, with the right kind of system and management, can do fifty to one hundred per cent more deliveries than the teams could put across, and without the constant overhead costs that are ever present where teams are used exclusively. There are thousands of dealers who could save enough money to amount to a substantial profit in their business by working out the maximum advantage of the substitution of auto trucks in connection with their deliveries.

WITH YOU and ME

Charles G. Reid, who was formerly connected with the Lehigh Portland Cement Co. as one of its traveling representatives, is now representing the Chicago Portland Cement Co. in Southern Illinois, east of the Illinois Central line.

H. C. Shields, who was formerly located at Toronto, looking after the interests of the Lehigh Car Wheel & Axle Co., has established headquarters in Chicago and will look after the Middle-West territory as well as Eastern Canada.

Dr. F. E. Grant, treasurer of the Bonner Portland Cement Co., recently purchased a summer home just outside of Kansas City, Mo., embracing a 40-acre tract. Dr. Grant has been beautifying and improving the grounds with cement. Posts, urns and other features are being constructed on the farm.

H. B. Potter, of the Los Angeles Pressed Brick Co., has been elected president of the Association of Credit Men of Building Material Dealers. D. H. McDonald, of the San Pedro Lumber Co., was chosen vice president. Mr. McDonald, John Hokom, J. C. Belding and H. K. Koebig were the new directors named.

A. E. Martin, who for some time has been superintendent of the Palmyra Sand Co., at Palmyra, N. Y., is to locate in Syracuse, the headquarters of that company. He is now general manager and will have charge of the sand company's several branches. New branches of the company are to be opened in Rochester, Oswego, Utica and other places.

S. B. Chittenden, Jr., assistant Western salesman of the Lehigh Portland Cement Co., returned to the Chicago office last week, after a three-weeks' visit among dealers of Indiana. He stated that as a result of talking with the "trade," he has become exceptionally optimistic and bases his optimism on the fact that dealers are not only talking "good times," but are actually buying supplies.

Political leaders and citizens of Kansas City, Mo., have signed petitions asking Walter S. Dickey, of the Walter S. Dickey Clay Mfg. Co., to become a candidate for senator. The action is said to be a united one among the politicians; however, among the 807 names that were attached to the petition the names of Republicans were most conspicuous. Mr. Dickey says that he has not yet made up his mind whether or not he will accept the candidacy that has been offered him.

Lawrence Hitchcock, for many years an officer of the Kelly Island Lime & Transport Co., of Cleveland, Ohio, and its general manager of sales, has resigned these connections to become president and general manager of a new concern that has just been organized, to be known as the Federal Lime & Stone Co., which will embark in the lime business upon a very extensive scale in the famous White Rock district of Northern Ohio. About the first move that the new company will make will be the erection of an expensive hydrating plant and later it plans to extend the lime business with a chain of plants in other favorable localities. Mr. Hitchcock is well known to the lime fraternity as one of the most active and aggressive workers in that particular field, being identified with one of the most extensive of the pioneer companies, and his

efforts have been signally crowned with success. In the new undertaking he expects to redouble his efforts in the production of the highest type of finishing hydrate that can be produced, and his long



LAWRENCE HITCHCOCK.

familiarity with the details of the business is the best guarantee of its certain success.

The Kelley Island Lime & Transport Co., Cleveland, Ohio, announces the appointment of Henry Angel as general sales manager, vice Lawrence Hitchcock, resigned. Mr. Angel is known to a very wide circle of friends as "Harry" Angel, and has been all of his life identified with the sale of building materials in Cleveland. He used to sell German and Belgium cement before there was any of that product manufactured in this country, and has sold lime from the time that he was a boy, claiming to be the first man to sell a bag of hydrate in the Cleveland market. He was a wide acquaintance with the trade through his many years of active connection with the sales department of the Kelley Island Lime & Transport Co., and is on to all of the curves in the building materials business, having served efficiently in every capacity.

Scheduled Meetings.

July 22-24.—Ohio Builders' Supply Association, annual summer meeting and outing, Cedar Point, Ohio.

Sept. 13.—Tri-State Roads Association, third annual convention, San Francisco, Cal. (Meeting to be merged with the Pan-American Road Congress.)

Sept. 13-17.—American Road Builders' Association, American Highway Association, Pan-American Road Congress, Oakland, Cal.

Oct. 4-7.—Northwestern Road Congress, annual meeting, Cedar Rapids, Ia.

Oct. 11-15.—National Paving Brick Manufacturers' Association, annual convention, Dayton, Ohio.

Members of the Builders' Exchange at Memphis, Tenn., listened to an illustrated lecture by representative of the United States Gypsum Co., on the many uses of gypsum as a building product. One of the interesting points brought out was the use of the materials as fire retardents, this feature being illustrated with stereopticon slides showing the resistance offered against the intense heat of the fire at the Edison buildings, Orange, N. J. A similar lecture was given before the Pittsburgh Builders' Exchange on Thursday, July 1.

Highway Commissioner Cunningham, Harrisburg, Pa., recently accepted the offer of cement companies and citizens of Lehigh and Northampton counties to furnish cement for the construction of a highway between Allentown and Easton, except through the burrough limits of Bethlehem. The offer includes about 40,000 barrels, and plans are under way to accept from citizens the stone necessary to construct the road. The proposition was made that the state pay for the engineering and grading, the material to be furnished free.

The Contractors' and Dealers' Exchange of New Orleans has selected August 11 as the date of its annual outing, always the biggest event of its kind of the year in the Crescent City. This date is a little later than the usual annual date, but committeemen said that better weather conditions will prevail in August. This committee is in charge of the affair: "Uncle Jim" Aitken, chairman; "Jimmy" McGowan, "Bill" Pfaff, "Prof." Schaff, "Si" Nott, "Splinter" Spangenberg and "Fatty" Stern.

Announcement has been made by the Marion Steam Shovel Co., and the Marion Osgood Co. to the effect that the litigation which has been carried on for the past several years between these two companies has been satisfactorily and amicably adjusted. This settlement covers all machinery heretofore shipped by the Marion Osgood Co., and grants to them shoprights to continue the use of those patents held by the Marion Steam Shovel Co., which are involved in the Marion Osgood Co.'s machines as at present constructed.

John R. Morron, president of the Atlas Portland Cement Co., New York City, is a member of the Paraguay group committee which, with others, co-operated at the recent conference with the delegations from various Pan-American countries. According to the recent announcement of Secretary of the Treasury William G. McAdoo, the group committees will continue to assist the International High Commission on Uniform Legislation, which will undoubtedly be given official recognition by President Wilson very soon. This has as its motive the promotion of South American trade.

Professor Charles M. Spofford, M. Am. Soc. C. E., of the firm of Fay, Spofford and Thorndike, consulting engineers, Boston, and head of the Department of Civil and Sanitary Engineering of the Massachusetts Institute of Technology, has been appointed by the governor of Massachusetts a member of the Terminal Commission, constituted by a recent legislative act to investigate the subject of terminal facilities and the improvement of facilities for the transportation of freight in the Boston Metropolitan District.

The RETAILER

The Value of the Testing of Materials

BY H. H. MORGAN.

The testing of materials is a broad subject. In my remarks I shall try to confine my attention to the testing of such materials as I understand you gentlemen handle. It would not be out of line, however, to indicate how comparatively recent and how rapidly the demand for testing occurred and has increased. Tremendous strides were made in the sciences during the nineteenth century. Chemistry and physics had their share of attention, and perhaps the more because of the recognized application which they bore to the manufacture of materials and their ultimate incorporation into commercial products. Almost as soon as an invention was made, scientists set about to conquer its difficulties, chemists and physicists discovered new laws, grasped new opportunities and strove with one another in the endeavor to advance the world's material prosperity. In close proximity with the chemists and physicists came the mathematicians, who, by the application of their formulae, laid the foundation on which the inventive genius saw his ideas raise to higher and more productive heights.

To mention the noteworthy discoveries of the Nineteenth Century, or to trace the development of even one of them is a matter of much greater record than is possible here. Sufficient must be the thought that the world's infant industries of former days are the giants of today as a result of the application of chemistry, physics and mathematics. In this development it was but natural that the scientists should know the properties of the materials with which they dealt and of the materials which they developed. This was accomplished by tests physical and chemical. Testing is essentially an attribute of the principal sciences of chemistry, physics and mathematics, though we today prefer to regard it almost as a science apart from the two; for the fact is that testing has become such an important subject as to make it one of special study in many different ways.

While previous to the Nineteenth Century it is inconceivable that there was no such thing as testing, it was only with the development of materials coincident with this century that the first work in testing and development took place.

In 1812 Samuel Brown, having improved his ship chains by scarf welding, also introduced a machine "which by enabling him to put as great a strain upon the cables as was likely ever to be brought upon them when in use" thus detected any defective material or insufficient workmanship. This undoubtedly constituted the first real testing machine and probably was the first effort to accord the purchasers the proof that materials were able to meet certain contemplated conditions. Brown's humble beginning founded a series of ample and worthy successors and testing machines of all descriptions and for testing all sorts of materials have been developed. The tremendous advances made when materials of construction began to be literally dumped on the world, brought up many questions of strength and quality as related to safety and on most of these materials the engineers, architects, contractors, etc., looked to the testing machine and inspection for the answer; purchasers of materials found it necessary to specify their desires more than ever, and the art of testing assumed new and more important phases.

In considering the subject of testing of any material there are many things to consider. In the first place and most important, is the occasion for the testing, and it is pertinent here to mention what the occasions for testing are. First, the testing may be performed to control the manufacture in furnishing a uniform grade of material complying with certain requirements which have practically been demonstrated as essential requirements. The testing in connection with this service is generally called "inspection" and in addition to the testing proper will cover a very thorough sampling of the material of specific requisitions or deliveries and the positive acceptance or rejection of the specific lot of material upon the test results obtained. In this connection emphasis is to be placed upon the fact that the tests made very seldom have direct connection with the use of the material. The test requirements are developed as a result of very extensive research and tests on materials which have given satisfactory service in years past. The test requirements or limits are based upon the results obtained from tests of the satisfactory materials mentioned. This point is very significant and should be given most careful consideration in considering the results of tests obtained; for example, in the standard specifications of the American Society for Testing Materials covering cement, the determination of strength is made by means of a tensile test both in neat and sand mixtures. In practical work cement is not used in tension at all, and yet we have a requirement in the specifications calling for a minimum tensile strength. The requirement of the specifications is based upon the fact that experience has demonstrated that a good or suitable cement should under the conditions of the tensile test develop certain minimum strength results and that a cement falling below these requirements is not suitable.

This test is simply an indication of the quality of the material and furnishes no data whatever based on which the design or construction of any concrete work could be constructed. In practically all steel specifications a requirement is made that the test specimen subject to tensile strength shall show a final percentage of elongation of not less than a certain amount, say, for example, 25 per cent. In the actual work the steel is never subjected to conditions of stress which would develop the elongation of the test condition; the requirement, however, furnished a direct indication of the ductility of the material and is, therefore, a requirement of the specifications.

* One of the interesting topics discussed at the last meeting of the National Builders' Supply Association was "The Value of the Testing of Materials from the Dealers' Standpoint," by Mr. Morgan. The first installment of his paper is presented herewith; it will be concluded in the next issue.

I am going quite completely into this matter, as in many cases a person is very liable to misinterpret the results of such tests which he may have under consideration.

The second occasion for testing is that in which an engineer, a manufacturer, a dealer, or other party interested desires some test data based upon which he can design or construct. To fill this requirement it is necessary that tests be made upon the finished material or structure, as the case may be. If the finished material is concrete, the tests should be made on the concrete; if the finished material is a fireproof column the tests should be made on the fireproof column; if the test is on chain, the chain should be subjected to actual test. Furthermore, it is important that such materials or combination of materials should be subjected to tests in as near the exact condition of service as possible. If a person considering test results does not bear this in mind, he is very liable to be misled by the results furnished him, for example, I could cite many instances where a sand mixed with cement into briquettes and subjected to tensile tests will show highly satisfactory results and yet when mixed as the cement mortar with coarse aggregate into concrete cubes and subjected to crushing tests, the results obtained are far from satisfactory. I will not take your time to go further into generalities on the subject of testing materials, but think perhaps it would be of interest to you to make a few remarks on the significance of certain tests made in connection with either the inspection and testing or testing alone of such materials as you gentlemen daily handle. I will first take up the subject of lime.

Lime.

Lime as lime mortar has been used for ages in building construction. Ancient builders were skilled in its use, the Romans especially were familiar with the properties of lime, and the endurance to the present date of the mortar which they made is a marked matter of note. Peculiarly enough, in spite of the fact that lime has been used in construction work since those early days, there is at the present time no certain or positive methods of securing any serviceable data; in other words, there are few tests that can be made which have any distinct or positive significance, and where these tests have been made, they have not covered the field very conclusively.

The American Society for Testing Materials is endeavoring to draw up a specification to control the quality of lime, and in their 1914 meeting presented a tentative specification for lime which you gentlemen will find of interest and value, as unquestionably a few years' time will bring about the general adoption of some such specification. The difficulty in securing a specification that will definitely control the quality of lime as a building material especially is the difficulty in determining a measure of the adhesive quality of the material—this has necessarily made the specification one controlling principally the purity of the material from a chemical analysis—and its fineness.

This difficulty is due to the fact that lime has no binding or adhesive qualities in itself, it is not self-hardening, and its binding qualities are largely dependent upon conditions outside of the control of the manufacturer. Lime mortar hardens first by drying out, in the same manner as would clay or other non-cementitious plastic materials; this hardening is only temporary and would disappear on the mortar becoming wet. The permanent hardening of lime mortar is due to the absorption of carbonic acid from the air, which results in the formation of calcium carbonate; of course, you will appreciate that this is dependent upon variable conditions such as the amount of carbonic acid in the air, the amount of moisture in the mortar and the thickness and density of the coating in the case of plaster, or the permeability to air of the mass in the case of masonry; temperature, etc.

While due to this condition of aging it is impossible, of course, to make a determination of the adhesive quality of various mortars in connection with tests for the protection of the purchaser of lime, still, there is a field for considerable work in the testing of lime mortars and the determination of adhesive strength. Messrs. Doty and Gibson made quite a series of tests at the request of a large brick manufacturing company in determining the adhesive strength from a somewhat different angle of view. They desired to determine the influence of the absorptive capacity of brick upon the adhesion of mortar. The tests were fairly conclusive and were of a nature which could be readily applied to the testing of various grades and proportions of mortar. The specimens for the tests were laid up three brick directly above each other, and were stored for a considerable length of time, when the central brick was sheared out from the two outside ones, the load necessary to shear being recorded.

There is not much more to say in connection with the testing of lime except that I am confident in the course of a year or two there will certainly be a definite specification for at least hydrated lime, and possibly for other limes as well, and that you gentlemen will be called upon to furnish material to such specifications.

Building and Paving Brick.

The testing of brick lends itself to a natural division into "building" and "paving" brick. The American Society for Testing Materials since 1909 has been endeavoring to determine a satisfactory specification for "building" brick. In their work they have made a series of investigations with the co-operation of various testing laboratories at the different colleges and universities, as well as with the assistance of various commercial testing laboratories. No specification has definitely been adopted by the society, though at the present time the proposed standard specifications cover crushing strength requirements, absorption test requirements and freezing test requirements on four classifications of building brick, viz., vitrified brick, hard burned brick, common brick

firsts and common brick seconds. The minimum crushing strength requirements of vitrified brick is 4,500 pounds per square inch, and the minimum absorption requirement is five per cent; of the hard burned brick, 3,000 pounds per square inch crushing strength and twelve per cent minimum average absorption; the common brick "firsts," 1,800 pounds crushing strength and eighteen per cent absorption, and common brick "seconds," 1,200 pounds crushing with no requirement on the absorption test. Please appreciate that this specification has not been adopted, nor is it probable that it will be definitely approved in the shape and with the requirements mentioned. In consideration of the variation of the requirements of the specifications for the different classes of brick, it may occur to some of you that it is immaterial so far as building brick is concerned, whether or not it has a crushing strength of 5,000 pounds or of 1,500 pounds per square inch. In a measure, you will be correct in taking this view; on the other hand, please appreciate that any vitrified brick should show at least 4,500 pounds per square inch crushing strength or it is not a properly manufactured vitrified brick irrespective of the service for which that brick is put. The test is not made with a direct consideration of the loads that that particular brick is to bear in service, but is made as an indication of the quality of manufacture of that particular specimen of brick.

On the subject of paving brick, you are all more or less familiar with the abrasion or rattle test that has been adopted by practically all of the municipalities for the determination of the resistance to abrasion of the various paving bricks on the market. This is a test which perhaps comes nearest approaching the conditions of actual service of any of the tests that are made in connection with the inspection of materials. This will be apparent to any of you who have seen a rattle test, from the fact that it is a definite abrasion of chilled cast iron balls or shot upon the brick. The significant observation of the test is the percentage of weight lost, and it is important to note that in this as in all tests of materials, every precaution should be taken throughout the conduct of the tests to make the conditions absolutely correct. This has been shown through the experience which has finally developed the standard rattle adopted by the National Paving Brick Manufacturers' Association, and it is interesting to note that for many years the variable results obtained upon rattle throughout the country was due to a large extent to the hardness, or variation in hardness, of the cast iron material used as the abrasive charge. This variation has undoubtedly caused much concern to many of you gentlemen and possibly operated to net you very serious losses. However, this matter, I believe, is now satisfactorily arranged so that you all may know very closely what requirements the particular brick you are handling can meet. Before leaving the subject of paving brick, however, I desire to express a belief that it will be but a few years before it will be universal practice for the various municipalities to either send their own inspectors, or employ commercial testing laboratories to sample and test paving brick at the point of manufacture. This will bring the inspection and testing of paving brick through an evolution such as the testing of cement, the testing of structural steel and many other important materials of construction have passed. The logical and consistent place to make the inspection is at the plant, where the sampling can be done representative of a particular kiln or lot of brick. The inspector can sample and test brick which is properly representative of the brick which he will load following the results of satisfactory tests; the operation will be much clearer and businesslike than is the present almost general condition under which the City Engineer or other municipal authority will sample and test the brick after it is received on the building site. If the material is patently wrong, the manufacturer or dealer has the expense of reloading and shipping the brick to the plant or to other destination. On the other hand, the tests taken may not be truly representative of the brick on the street and endless argument prevails to the loss of all parties concerned and the accumulation of a load of disgust on the part of the property owner. Of course, it is to be appreciated that this plant inspection of paving brick will be final only in regard to the test of the brick and that the municipality through a street inspection will have an opportunity to cull individual defective brick; however, the supervision of loading of the brick from the kilns or respective lots will reduce the amount of culling necessary on the streets to a minimum.

Cement.

In reference to the inspection and test of cement, you all have more or less come in touch with this matter, and yet I feel that the majority of you are not intimately conversant with the object and aim of the inspection and testing of cement either directly by the user, or for the user by the commercial testing laboratories; nor are you familiar with the fact that it is of the greatest importance that the testing shall be conducted in laboratories possessing the best possible equipment under the best methods available and under the supervision of skilled technical men.

One of the first materials that the American Society for Testing Materials attempted to control by a specification was cement. As a result of their efforts it is almost universal practice for the cement manufacturers and users to endeavor to furnish or secure a cement which complies with the requirements of this specification. This specification calls for certain minimum strength requirements in neat cement briquettes, or cement alone formed into test specimens, for ages of 24 hours, 175 pounds; 7 days, 500 pounds, and 28 days, 600 pounds. In a mix of one part by weight of cement to three parts by weight of a standard sand they specify minimum strength requirements for 7 days of 200 pounds, and for 28 days of 275 pounds. Please appreciate that it is possible that cement falling somewhat below these specification requirements may give satisfactory service, yet, it is a fact that any strength results lower than these limits, which are lenient ones, indicate an inferior quality of cement. The opinion that such cement is inferior, is the opinion and judgment of the largest society of testing engineers in

the country and represents a judgment of inferiority by not only the engineer who builds, but also the judgment of the manufacturer of cement. In addition to strength requirements they specify setting requirements, specifying an initial set of not less than 30 minutes determined by a laboratory method on pats of neat cement, and while a cement when formed in the manner specified, which sets in less than 30 minutes, might probably be used with satisfaction on construction work, it is the judgment of engineers who have been building for years on the most important construction work of the country, that cement showing less than thirty minutes initial set under the exact conditions of these laboratory tests, is not safe to use in construction work. In a similar manner the final set determinations of the specifications stipulate that the cement shall not have a final set in over 10 hours. Again here it is the judgment of the largest constructors, that a cement not complying with this requirement is too slow in setting. Fineness determinations are stipulated as follows: Not less than 92 per cent of the cement shall pass through a standard screen of 10,000 openings to the square inch and not less than 75 per cent shall pass through a screen of 40,000 openings to the square inch. A cement ground coarser than the requirements of this specification will allow will not have the same sand carrying capacity as a cement complying with the specifications and such a cement will be of an inferior grade from that acknowledged by the manufacturers themselves as being a standard of quality in this regard. In addition soundness or constancy of volume tests are stipulated. Pats of neat cement are moulded on glass under this test and remain in moist air for a period of time and are then subjected to the action of steam under atmospheric pressure for five hours. Under this test they are not to change in volume as evidenced by warping, swelling, cracking or by softening. This again is a test which in the judgment of the best thought and knowledge is significant in indicating a satisfactory or unsatisfactory condition of the cement.

In my remarks in regard to cement so far, you will note I am laying a great significance on the fact that the requirements of the American Society for Testing Materials' specifications is not an arbitrary selection or determination of minimum strength, setting or other properties, but is the result of the experience of the biggest builders in concrete and of the largest manufacturers throughout the country, and that a compliance with the requirements of this specification is essential in securing a cement of a satisfactory grade that is not inferior or deficient in any of its properties.

Now we all will appreciate that it is the effort of every manufacturer of any product including cement, to produce a product which strictly complies with the specification requirements. Theoretically it is possible for a cement manufacturer to produce 100 per cent of good material, but practically this is not possible, any more in the cement business than in any business. In cement it is patent to all of you that it is not possible to tell whether a cement is satisfactory or not in its appearance, its feeling or its taste. The distinction between a good and a bad lot of cement must be made by thorough testing in accordance with the requirements of the specifications. In the manufacture of cement the raw materials are often non-uniform in character, and the chemist of the manufacturer must keep careful watch of them. Care must be taken to pulverize them to the right degree of fineness to preserve a uniformity of mixture and to properly feed this mix into the kiln. The burner at the kiln has his responsibility, for he must be constantly on the alert to see that the kilns are working properly and that his clinker is properly burned. Attention must be paid to different atmospheric conditions, and in addition permit the shipment of any cement that does not sincerely hope, and we do believe that the policy of all recognized cement companies of reputation is not to witting thereto, the manufacturer must make periodical tests on his product to be certain that the controls of the various operators of the manufacture are what they should be.

All of these operations and all of these responsibilities are bound to operate with a lack of vigilance on the part of some one or some men during some period of time or another. Any slight lack of vigilance, and such lack of vigilance you will appreciate is only human, will result in the finishing of certain portions of the cement which is below the standard in quality. We comply with standard requirements; however, there is a long distance between the management dictating this policy and the shipping clerk who loads a particular carload of cement, and so at the present time it is necessary to secure oneself against the delivery of unsatisfactory cement by sampling and testing each specific carload of warehouse lot of cement.

In the early stages of the manufacture of cement it was the custom of the large builders to set up field laboratories on the site of the building construction and sample and test the deliveries as they were made. On account of the necessity of at least "seven-day" strength test before any knowledge of the quality of any lot of cement was known, this necessitated large warehouse facilities at the building site and the storage of cement in anticipation of requirements seven to 10 days ahead. As the demand for cement testing became more pronounced and cement testing more extensive, it was found that the only logical method of handling the work was for the large commercial testing laboratories to set up laboratories either directly at the plant of the cement manufacturer or at least to sample at the cement plants and test in their laboratories directly available.

The organization of the commercial testing laboratory is more or less familiar to all of you gentlemen, but it is pertinent to here say that purely from the point of view of economy the commercial testing laboratory can serve the user's interests to best advantage simply because instead of handling the requirements of one particular job, he is in his laboratories handling simultaneously the testing of the cement being loaded and furnished to 10 or 12 to 100 different pieces of construction work. It is also to be emphasized that the commercial testing laboratory work is entirely separate and distinct from that of the cement manufacturer; and furthermore the testing is much more thorough and specific than that of the manufacturer for the reason that he samples and tests thoroughly each particular carload of material and accepts or rejects that specific carload upon the results of tests obtained. It is general practice when the sampling is done from the car when loaded at the cement mill for the manufacturer to hold this car 24 hours pending the results of the soundness or constancy of volume test. If this test is satisfactory the manufacturer on his responsibility will permit the car to go forward to the work. This means that the "seven-day" tests of the testing laboratory are under way while the car is in transit and where the delivery consumes seven to 10 days it is general that the purchaser has a report of all tests to and including the "seven-day" period in his hands by the time the car reaches him. It is patent that this arrangement reduced the amount of storage space necessary at the building site and the

handling of cement direct from the car to the mixer is feasible.

Where a cement company permits a bin reservation the sampling may be done from the conveyor belt during the period of filling a particular bin. Upon filling, the bin is sealed and the samples placed under test. On the completion of satisfactory tests to and including the tensile tests for the "seven-day" or in special cases also "28-day" tensile tests, shipments are checked from the bin released on such tests. Under this procedure only cement is shipped upon which tests are completed and satisfactory.

Where cement is sampled in lots in warehouses or at the work sites, all lots are kept separate, and upon completion of satisfactory tests to and including the "seven-day" tensile tests the cement is tagged for identification. When the cement is teamed from warehouse, dependence is placed upon the construction superintendent to see that only tagged cement is received. In this sampling and testing of warehouse lots, it is the practice to keep the warehouse lots separate and permit the teaming to the several jobs which may call for cement tested by that particular concern. This obviates the necessity of a dealer holding a separate reservation for each particular job.

As you gentlemen are more directly interested possibly in the sampling and testing in warehouse lots, it might be directly interesting to you to know that there are dealers who keep a stock of Hunt tested cement for example, on which all tests to and including those of the "28-day" period are completed and on which without delay they can make deliveries of cement which they know positively complies with the requirements of the standard specifications.

(To be continued.)

Harry P. Boyd Passes Away.

It is with deep regret that we record the death of Harry P. Boyd, of Baltimore, Md., who was well and favorably known to many of our readers as secretary and treasurer of the National Building and Supply Co., of that city. For many months Mr. Boyd had been in failing health, and on the



HARRY PARKER BOYD.

recommendation of his physician had taken trips for recuperation to Atlantic City and other places, although it was the middle of last month before he definitely decided to give up his duties in connection with his business affairs, retiring to the Church Home and Infirmary, where he died on the morning of July 2.

Mr. Boyd was born in Frederick, Md., in 1864, and lived in Baltimore nearly all his life. He had been identified with the National Building and Supply Co. since boyhood, starting in as office boy to run errands before the telephone was invented. He was never connected with any other business establishment, and his work had no little to do with the signal success of the concern to which he was attached. He was a consistent worker in the National Builders' Supply Association and one of the founders of the Del-Mar-Col Building Material Dealers' Association.

He was a man of extensive business and social connections, being vice-president of the Maryland Terra Cotta Co., secretary and treasurer of the Lime and Cement Exchange, president of the Mt. Washington Community Association, a member of the

Baltimore Credit Men's Association, The National Credit Men's Association, Merchants and Manufacturers' Association, the Builders' Exchange, Rotary Club, the Baltimore Athletic Club, the Maryland County Club, the City Club, the Catholic Club, the Knights of Columbus and the Catholic Benevolent League. He is survived by his widow, two daughters and one sister, all of whom reside at the family home in Mt. Washington, Baltimore.

Mr. Boyd was a man of sound business judgment, a persistent and earnest worker, and of high character and extremely attractive personality. His memory will ever be cherished by a large number of admirers and friends who are appreciative of the sterling qualities of the successful business man and attractive companion.

O. B. S. A. OUTING TO BE LARGELY ATTENDED.

Communications from both active and associate members of the Ohio Builders' Supply Association reaching the office of Secretary F. H. Kinney, of Cincinnati, indicate that there will be an increased attendance at the summer outing of the association, to be held at Cedar Point on July 22, 23 and 24. Similar outings have been held for the past five years, becoming more popular with each succeeding year and consequently more valuable to the association. The meetings to be held at this year's outing will be as informal as possible, but the subjects under discussion will be of importance to each and every member of the association.

During the last year letters have been repeatedly sent to all members of the association, encouraging the organization and fostering of local associations, with credit features attached if possible. The efforts made by President Fay, Secretary Kinney and the members of the executive committee are beginning to bear fruit. Arrangements have been made whereby the association will send a man when necessary to the different localities to help organize and facilitate credit arrangements. There are at present 200 active and 50 associate members in the association, but the accomplishments of the last six months and the optimism of the officers indicate that the membership will reach the thousand mark in the near future.

Topics to be Discussed.

One of the chief topics under discussion at the summer outing will be the question of handling cement. The association has had a committee at work since the last annual meeting in February and the report of its activities will be received and acted upon at Cedar Point. Dealers from cities in adjoining states have announced their intention of being present and taking an active interest in the cement question.

The lien law of the state of Ohio has recently undergone a change, and this change, together with the work of the association in reference to the lien law during the past six months, will be reported upon by officials of the state association. Numerous other questions with reference to costs and credit will be brought up for discussion and will be given as much attention as time permits.

While the summer outing will last for a period of three days, there will be but one day of business session and the remaining time will be used for the social features of the association and for the arrival and departure of the attendance. The summer outing of the Ohio Builders' Supply Association has always been one to which retailers and manufacturers have felt free to take their families. Ample opportunity is given the supply men to look after the interests and welfare of their ladies and children. As in previous years, the wives and sweethearts will be there in large numbers.

"Cedars" is the name of the new hotel at which members and friends of the Ohio Builders' Supply Association will stop while at Cedar Point. Officers of the association request that reservations be made through Secretary Frank H. Kinney, 409 Johnson building, Cincinnati, Ohio.

BUILDERS' SPECIALTIES

Coal Chutes and the Advantages from Their Sale

Showing How the Handling of Coal Chutes Can Be Made to Assist the Building Material Dealer in His General Business.

Apart from the profits that the handling of coal chutes can be made to pay, it is very interesting to note the effect of the handling of this line on the general building material business, for it has been found that many dealers have taken up the sale of coal chutes in order to assist them in operating their business on a more economical and profitable basis. Through the winter months, and in dull times, the building material dealer is often confronted with the question of how to keep busy and other perplexing problems which if once solved would place him on the road to bigger profits. It is in this way that coal chutes and kindred articles are proving of great help.

One of the heaviest losses that the average building material dealer has to sustain is the loss of salaries because of idle help throughout the winter months, when the building trade is practically at a standstill. However, with the addition of specialties to the line there is plenty of work to be done that will be productive in the spring, such as soliciting the architect to specify the goods carried, acquainting the contractor with them and the drumming up of prospects for their future sale. In the handling of coal chutes this is the work that brings in the orders, and it must be remembered that the best time to talk to an architect or contractor is in the dull season, when he is not rushed with work. Naturally, the larger concerns who employ a force of salesmen can adopt this principle to the best advantage, but where the dealer does not employ salesmen his office men can be utilized in the same manner. Perhaps it will at first be thought impractical to devote so much time and attention to one line of goods, but when it is taken into consideration that the general lines can be worked at the same time the results are clearly visible, for in this way the dealers can keep in very close touch with the building trade, which is highly important in the building material business.

Because of the fact that coal chutes as a rule are patented articles they are sold under a trademarked name which immediately links any efforts that the dealer may make with the large amount of advertising and educational work that is being done by the manufacturers. Furthermore, in talking coal chutes to the trade the dealer is not forced to talk the benefits of coal chutes as a product, but can take for his arguments the particular advantages of the chute which he is selling, thereby receiving the maximum amount of benefit from his work. Coal chutes and other specialties can also be used to very good advantage in approaching a prospect, for it is a comparatively easy matter to incite interest in a specialty and to gain the prospect's attention when the general lines can be talked.

Too much emphasis cannot be placed on the fact that the handling of coal chutes allows the building material dealer to get in direct touch with the individual home owner, which in reality opens up a new field for the sale of building materials. Coal chutes can be sold direct when for use in old buildings, without going through the hands of the contractor. This enables the building material dealer to solicit and advertise to this class of trade with the view of bringing them to his place of business, where a suggestion in regard to other products which he is carrying often leads to a sale.

Coal chutes are fast becoming standard and the

The series of articles on coal chutes appearing regularly in ROCK PRODUCTS AND BUILDING MATERIALS are prepared for the sole purpose of interesting retailers of building materials in the splendid opportunities and profits offered in the sale of specialties. This particular article is being emphasized to illustrate the points brought out in the discourse. What is true of coal chutes is likewise true of all specialties.

time is near when they will be specified in every plan that is drawn. Therefore, when a contractor receives a job on a building in which a coal chute is specified, he is forced to go to the dealer handling the particular chute specified whether or not he is in the habit of buying his material elsewhere. So in this way the building material dealer is brought into contact with new accounts and is given an excellent opportunity to demonstrate to the contractor his ability to serve him in furnishing all of his material.

In putting coal chutes on the market the manufacturers are earnestly endeavoring to protect their dealers against price cutting by advertising their list prices and insisting as far as possible that the list prices be maintained. In this manner the dealer is pretty well protected from loss of profit because of price cutting, and any effort he may make to promote his sales will be rewarded by the returns that he is entitled to.

In every community there is at least one dealer who is commonly known as the "live-wire" because of his aggressive methods of doing business, carrying the new and up-to-date products and of continually keeping his name before his trade. Call this general publicity if you will, but the fact remains that it is a splendid asset for any dealer to have, and it must be admitted that one of the best ways to secure this reputation is by being able to supply the up-to-date improvements pertaining to the building material line, such as coal chutes.

CELEBRATE OPENING OF MEMPHIS WAREHOUSE.

Memphis, Tenn., July 6.—John A. Denie's Sons Co., of Memphis, celebrating the opening of warehouse No. 2, Roland street, Evelyn avenue and the Belt Line railroad, gave a barbecue and unique social function from 1:30 to 6 p. m. on July 3. The glorious Fourth falling on Sunday, it of course was partially a patriotic celebration. The menu cards in purple were artistically illustrated with a few verses. A large party responded and spent a pleasant afternoon. The menu card was uniquely gotten up in the following terms:

Gumbo Soup a la Cement	
Fish a la Raconteur	
Stuffed Olives with Crushed Stone	
Barbecued Pig	Dill Pickles with Screened Sand
Barbecued Lamb with Mortar Color Sauce	Buttery Lime Dressing
Macaroni with Liquid Konkreet	
Entrees	
Water Cress Salad with Salt Vitrified Pipe	
Jumbo Roofing	Green Laths
Browned Gravy with Acme Plaster	
Creamed Plaster Paris Fire Brick Cheese	
Blacquer Coffee a la Laclede	
Beaver Board Planked	
Blanc Monge	Anhauser Sauce
Souvenirs	
Japanese Fans for Hot Air	Lehigh Pencils for Orders
Transparent Caps for Plastering	
Refreshments	
"Old Chestnuts"	Liquids
Smokes	

DETROIT EXCHANGE OUTING RECORD EVENT.

This year's outing of the Detroit Builders' and Traders' Exchange, held at Tashmoo Park, is declared by all who attended as the best yet held by this body. There was a large turnout of members and their families and the gathering brought together a great many contractors, building material dealers and architects of Detroit.

The day was one of merry-making and the sport events were hotly contested. The entertainment committee saw that there was no lagging in the program of enjoyment and the United Fuel & Supply Co. furnished entertainment on the trip up to the park in the shape of a guessing contest, giving away six prizes. There were foot races, tug-of-war contests between architects and contractors, and a ball game between the architects and the exchange teams. The architects won the tug-of-war contest but the exchange beat the architects on the diamond to the tune of 10 to 7. To make the events of the utmost interest and to leave lasting mementos with the winners, a number of the dealers and manufacturers of Detroit contributed prizes for the sporting events.

NEW RETAIL INCORPORATIONS.

Mill City Lime & Cement Co., Minneapolis, Minn.; capital, \$50,000; incorporators, Albert and August Magnuson and Dan Rolland.

The Claypool Lumber & Coal Co., Claypool, Ind.; capital, \$10,000; incorporators, H. I. Isbell, D. A. Towsley and C. B. Isbell.

The General Builders' Supply Co., Indianapolis, Ind.; capital, \$600; incorporators, F. C. Schmid, D. R. Lindley, W. H. Barerre, Jr.

G. C. Penny Co., Detroit, Mich.; capital, \$2,500; to deal in sand, gravel and other builders' materials; incorporators, George C. Penny, Maynard D. Smith and Charles A. Bray.

Continental Cement Material Co., St. Louis, Mo.; capital, \$1,000,000; incorporators, C. E. Ellis, Columbus, Ohio; H. G. Young, Freeman Carts, B. H. Stewart, Homer Gray, of Charleston, W. Va.

Morton-Crosby Co., Chester, Pa., to deal in building materials; incorporators, Crosby M. Black and others.

The Brett-Rayner-Boyer Co., Cambridge, Mass.; capital, \$20,000; officers, O. D. Brett, Cambridge, Mass., president; Joseph A. Boyer, Lynn, Mass., treasurer; D. R. Rayner, Boston, Mass., director.

The Brookline Lumber & Supply Co., Brookline, Mass.; capital, \$20,000; officers, William C. Foster, Brookline, president; Alex. T. McDougall, Roxbury, Mass., treasurer; H. T. Crocker, Boston, Mass., director.

RETAILERS WANT QUOTATIONS.

The following retailers have written to ROCK PRODUCTS AND BUILDING MATERIALS asking for quotations on builders' supplies:

A. F. Laham, Lakewood, Ill., wishes prices on brick and sand.

Strothler-Herrin Lumber Co., Christopher, Ill., wishes information on crushed stone.

Fred A. Smith Lumber Co., Lena, Ill., wishes information on pure white crushed stone.

The Lovington Green Co., Lovington, Ill., is considering handling cement, lime, gravel, etc.

W. H. Dunlap, Jr., Cannonsburg, Pa., wishes samples and prices on hydrated lime on Pittsburgh freight rate.

A. C. Januson, Bovard, Pa., is considering handling supplies and wishes prices on patent plaster and kindred lines.

Atwood Lumber & Coal Co., Atwood, Ill., wishes prices on concrete roofing tile.

The North Columbus Lumber Co., Columbus, O., is opening up a new yard and wishes prices on all building supplies.

NEWS of the TRADE

Chicago Strike May Soon End

During the past two weeks building material manufacturers and dealers of Chicago have taken an active part in settling the labor disputes now tying up building construction in the country's second city. On July 1 43 lumber yards and 65 common face brick establishments either closed down entirely or stopped deliveries until the settlement of the strike. The brick firms thus affected are as follows:

Illinois Brick Co.	30
National Brick Co.	3
Carey Brick Co.	1
Calumet Brick Co.	1
Builders' Brick Co.	1
Chicago Brick Co.	2
S. S. Kimbell Brick Co.	4
Bonner-Marshall Co.	4
Hydraulic Press Brick Co.	4
Thomas-Moulding Co.	5
Kimbell-Hill Brick Co.	1
Mencham & Wright Brick Co.	2
Face Brick Department, Wisconsin Lime & Cement Co.	7

Just as this issue of Rock Products and Building Materials goes to press an announcement is made that the carpenters' district council in an all-night council session has adopted a resolution calling for a committee with full power to settle the strike. The committee will consist of 24 members of the union, one from each local, and together with President John A. Metz will go into conference with the executive committee of the allied material interests, which committee is empowered to negotiate full terms of settlement on behalf of the contractors. The peace move means that the dispute, in all probability, will be submitted to arbitration.

Building material interests of Chicago agreed to close their yards for the sole purpose of aiding the contractors in forcing the carpenters to a settlement of their differences. Until the last few hours the carpenters have refused to arbitrate, claiming that they had spent \$350,000 in fighting the contractors, and that they had practically won their demand for 70 cents an hour, a five-cent increase over the preceding scale.

A number of the minor unions, which have also been on strike, have settled their differences and are ready to go to work the moment an opportunity is offered. The strike of the carpenters has kept practically every workman in the building trade idle for the past two months.

Reports current in real estate and building circles indicate that there will be no let-up in building construction in Chicago during the next few years. One of the recent big ventures reported is the preparation of plans for a 16-story office building at the northwest corner of Washington street and Fifth avenue at a cost of \$1,000,000. Through a recent transaction Joy Morton, president of the Railway Exchange Co., has acquired the leasehold estate, and it is believed he will be ready to commence the erection of a new building in 1917, upon the expiration of existing leases. Because of his success in conducting the Railway Exchange building it is believed he will make a success of the new venture.

QUINCY HAS BUILDING INCREASE.

Quincy, Mass., July 3.—This city is now experiencing activity in building that far surpasses any other year of its history as a municipality. For the first five months of 1915 the inspector of public buildings issued 428 building permits at an estimated cost of \$658,872. This is an increase of 124 projects and \$176,940 valuation over last year.

Both residence and mercantile business increased, the former \$477,570 compared to \$329,540, and the latter \$75,975 compared to \$22,300 in 1914.

Boston Construction Outlook Good.

Boston, Mass., July 3.—Building permits were issued in Boston in the last two weeks to the extent of \$2,840,000. The number of projects furnishing this estimate of construction business compiled by the F. W. Dodge Co. for ROCK PRODUCTS AND BUILDING MATERIALS is 272. Excavations were begun the past week on a new city industrial school and Snider and Druker are taking bids on materials for the concrete foundation and structure of a 72-apartment house.

Building men are keenly interested in the starting of work on the Boston drydock. The contract has been awarded to Holbrook, Cabot & Rollins, and only remains to be approved by the governor's executive council. The contract figures are in the neighborhood of \$1,750,000, and the job will engage from 130,000 to 150,000 barrels of cement. The negotiations have been prolonged, including an enabling act passed during the recent legislature, but all matters are about gotten out of the way, and everything is expected to be signed up and sealed within a few days.

Another interesting construction is the National League baseball park, which the builders are hoping to have ready by August 1. After large excavations the concreting work of the big grandstand is now getting well under way.

E. S. Larned, of the Lehigh Portland Cement Co. office, has just returned from a stay of 10 days at Atlantic City, N. J. Mr. Larned landed Lehigh cement on the Braves' \$750,000 ball park job.

Waldo Bros., building materials and supplies, 45 Batterymarch street, has just become a Massachusetts corporation. The new title for the conduct of their business is Waldo Bros., Inc. The stated capital is \$300,000, and the officers and directors are as follows: C. S. Waldo, president; C. S. Waldo, Jr., vice-president; L. Howland, second vice-president, and J. G. Lincoln, treasurer.

Cement is found in fair demand notwithstanding another 10-cent rise the latter part of June. Cement now costs the Boston dealer \$1.57 a barrel, which is 20 cents more than on May 31. As soon as the market settles to the new basis, and with the continuance of present good conditions in the building trades, increased business is expected.

Buffalo's Building Program.

Buffalo, N. Y., July 3.—This city is doing some very interesting building this year, most of which has not yet been recorded in the permit list. The Lackawanna and Lehigh Valley railroad companies are now putting big gangs on their new passenger and freight stations. Each station will cover several acres and cost into the millions.

The Lackawanna company is depending on wood piles, running down to rock for foundation, with immense concrete caps for the superstructure to rest upon. One of the building superintendents explains that the site is especially adapted to wood foundation, as it is on the bank of Buffalo river, and the piles will always be kept moist by the water and will be practically indestructible. So the station will be perched on a dead forest, though it departs from that sort of material before it comes to the top of the ground.

The Lehigh Valley operations begin with 3,000 reinforced concrete piles, eight sided and about two feet through, the metal cage that is made up with the concrete being tipped with steel for driving. The piles will be 50 to 70 feet long and will go down to bed rock unless they come upon a boulder on the way that cannot be driven through. There will also be a large number of steel plates driven down to assist in the solidity of the structure. As yet the piling work mostly lies flat where it was molded, but it will soon go into the ground very fast.

The effort to get the New York Central Railroad Co. under contract also this summer for a similar station, but larger than both the others, perhaps, has been met by all sorts of complications, including the veto by the governor of the bill turning over some of the disused Erie canal property to the city. The plan may still go through with some modifications.

The Pierce-Arrow Automobile Co. has filed plans for a reinforced concrete addition to its plant, to be 60x400 feet, four stories high, the cost \$200,000. The present works are running full time and employ several thousand men.

The Schoellkopf, Hartford & Hanna Co. finds that the European war is shutting out the importation of aniline dyes, so there is need of more space, and have filed plans for an addition 80x300 feet, to be built of brick.

Reduce Building Material Prices.

Austin, Texas, June 3.—Coincident with the going into effect of the new mechanics' lien law on June 20 came the announcement from Dallas and other cities and towns of the state that a reduction of five per cent in the prices of all kinds of builders' materials would go into immediate effect. This important reduction of prices came as a voluntary act on the part of the dealers. They claim that the new law inaugurates a new epoch in the building world, so far as Texas is concerned. The law provides protection for the owners, the architects, the contractors, the sub-contractors, the workmen and the material men by empowering each of them to demand a bond guaranteeing the payment of all wages or accounts.

The announcement of a general reduction of prices of all building materials came as a surprise to the general public. It is expected that it will greatly stimulate building operations and will make the summer season brisk instead of there being the dullness that usually characterizes this period of the year. A "Build Now" campaign has been started, and it promises to receive a general and liberal response. It is claimed by material men that conditions in the state were never more favorable for building operations than now.

TOLEDO BUSINESS BELOW NORMAL.

Business and prices of building materials in the city of Toledo, Ohio, are a little below normal at present. The depression is believed to be caused by the four new yards competing for business, rather than by the building situation, as building permits of the city show an increase when compared with those of the corresponding period last year. Real estate is not selling as it should, and dealers are not over sanguine about the immediate future.

Decline in Canadian Construction.

Toronto, Ont., July 3.—Statistics compiled by the city architect in Toronto for the month of June and for the first six months of the year show a substantial falling off in the construction of new houses. During June there were 541 permits granted as compared with 820 for the same month last year. The value of the buildings for which the permits were issued is \$806,838 as compared with \$2,935,054 for the same month last year.

During the six months from January 1 to June 30 the value of the buildings for which permits were granted was \$3,184,197 as compared with \$18,476,140 for the corresponding six months last year. There have been 607 buildings completed during the first six months of this year as compared with 1,183 for the same period last year.

Two building supply firms made the same explanation for the building trade not picking up as fast as some of the other trades. The war gave an impetus to certain trades and as people found they had to have certain things they became used to circumstances and placed orders. Then people are looking to see if the bumper crop is to be as large as claimed. If it is there will be a resumption of all classes of business as soon as the money begins to flow from the banks to the pockets of the people.

Montreal supply houses report a slight improvement. Some orders for brick have been received from the Maritime provinces and Newfoundland. The Montreal supply firms are receiving orders for supplies from a large number of smaller places in the province of Quebec.

Cincinnati Retailers Busy.

Cincinnati, Ohio, July 3.—The building material market in this vicinity is improving steadily, according to all accounts, both in the amount of business actually in the hands of dealers and in the prospects for future use. One of the most cheering announcements was that made public a few days ago regarding the acquisition by W. E. Harmon & Co., of New York, one of the largest realty concerns in the country, of 70 acres of land near Hyde Park, in the eastern part of the city. The company will proceed immediately to subdivide its purchase and develop it by the construction of comfortable homes, to be sold on the easy-payment plan. This means several hundred houses to be built within a comparatively short time, calling for considerable quantities of all sorts of material.

The Moores-Coney Co. is, as usual, able to report a very satisfactory run of good residence work, of such proportions that the total business runs up into figures which would be good even if made up of large jobs. This shows a very healthy condition in the local trade, and the company has little cause for complaint. A job of considerable size landed recently was for the brick required in the construction of the women's new building at the University of Cincinnati, one of the Johnsonburg lines handled by the company being selected by the architects.

NEW YORK MARKET.

New York, N. Y., July 3.—The general building materials market in this vicinity is showing much more strength than at any time so far this year. Building money has eased considerably and construction figures will show a decided gain over the preceding half year. The actual gain is approximately \$7,000,000. Consequently, prices have moved up in some lines. Lime is quoted at \$1.15 and \$1.37½. Sand is a little firmer at 45 cents; crushed trap rock is five cents higher and is being quoted at 85 and 90 cents a cubic yard. Portland cement has advanced 10 cents a barrel and there was a report today that Rosendale natural cement would advance after the holiday. The National Fireproofing Co. says that there will be no immediate change

in its quotations, which have held very steady for more than six months, except for some shading on quantities. The gypsum market, according to the United States Gypsum Co., is still disturbed, and this has had a reaction upon the plaster situation.

The Rebuilding of Salem.

Salem, Mass., July 3.—Demand continues large for cement, sand, gravel and all sorts of materials in the rebuilding of the area devastated by conflagration on June 25, 1914, when on 251¼ acres 99 streets were wiped out with structures valued at \$15,000,000. There has been rapid recovery, and in just one year there has been erected street after street of solid dwellings, fireproof factories and business blocks. The building permits of the year's period total 517 to a taxable value of \$6,500,000. The building rate for the single month of December was as great as during the most prosperous year in Salem's whole history, showing the immense activity of the citizens and firms of the fireswept section.

No wooden building shows a shingle roof. They have asbestos, slate or metal roofs, but no shingles are permitted. There must be chimney flue linings, brick nogging on each floor, plastering of all cornices and furnaces and many other requirements to insure that no such fire shall ever visit the city again. No more three-deckers is the rule—and there isn't one in the whole rebuilt section. This has led to the development of splendid types of two-family and one-family homes, and there have been built in the burnt-out district 171 of the latter and 287 of the former kind of dwelling. Already there have been rebuilt 850 apartments of the finest type. When the buildings now under way are finished Salem will have constructed 1,400 new homes.

Seventeen miles of new water mains have been laid and a 10,000,000-gallon reservoir is planned. Streets have been widened, new ones laid out, a great dock down on Salem harbor built and some of the eight new firehouses planned are built.

The loss by fire to the city of taxable property was \$5,300,000. In the past 12 months \$6,500,000 of taxable property has been rebuilt, making the city richer by \$1,200,000 than before. The building boom is still on and permits are being issued every day for buildings of all kinds. The immense new Naumkeag mills, now being constructed, will be absolutely fireproof and sanitary. The city has been building new parks and playgrounds, too, and has planted 228 new trees to replace some of the 594 shade trees destroyed by the fire. A great feature is the swimming pool in the new public park, built by men thrown out of employment by the fire.

Important Construction Program.

Jacksonville, Fla., July 3.—Of considerable importance is the construction program prepared for Jacksonville during the coming summer months. The city and county particularly have taken the lead, and such work as municipal docks, terminals, school houses, etc., in addition to apartment and residence structures, will bring the total to a high value.

The Port Commission, which is composed of about a dozen of the city's leading business men, has in charge the construction of the municipal docks and terminals on the St. John's river, the work to cost around \$1,500,000. Montgomery Corse is chairman of the commission and F. W. Bruce is the chief engineer.

Mr. Corse has also under consideration the erection of the new cotton compress and will let the contract when plans have been perfected.

Additional schools in Duval county are assured by the voting of \$1,000,000 to cover the cost of their construction. The architect has not yet been appointed.

R. A. Benjamin, architect, is preparing plans for

the Prewitte apartments in Riverside. About 20 families can be housed in the proposed building.

Jacksonville is to erect an armory to cost approximately \$150,000. F. W. Long & Co., of this city, has the general contract.

Plans are being prepared by W. B. Camp for the W. A. McDuff residence, to cost \$25,000.

The American Trust Co. building, to cost \$18,000, and which is to be leased to the Postoffice Department as a substation, will be erected under the supervision of Buckner & Fitchner.

The Duval street viaduct, which the city and the Seaboard Air Line, acting jointly, are erecting over the railroad's tracks, will be constructed by Hillyer & Speering Co. at a cost of \$120,000.

Pittsburgh city councils have arranged a bond issue of \$240,000 with which to raise Duquesne Way, Penn avenue and the cross streets between them above flood level. The work has already been started on an improvement which will greatly benefit the section of the city along the Allegheny River.

Bids are being taken by the city of Pittsburgh for the excavation and foundation for the \$3,000,000 combination city hall and courthouse on Grant street. The total amount will be about 26,000 cubic yards and a bond of \$30,000 is required by the successful bidder.

County commissioners of Allegheny county, Pennsylvania, are taking bids on the second tunnel under the South Hills and work will be started, it is expected, about July 10. This tunnel will cost probably \$2,000,000 and will open for immediate development and extensive building, the most beautiful resident section on that side of Pittsburgh.

The McKeesport Tin Plate Co. has had plans prepared for \$2,000,000 addition to its plant at McKeesport, Pa.

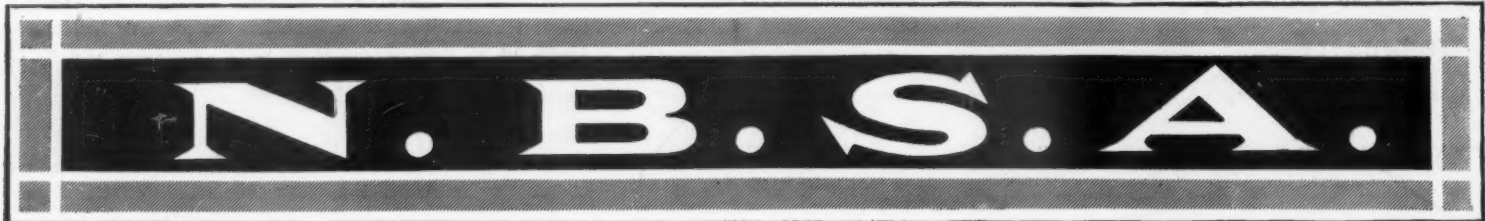
The Shelby Tube Co. is having plans prepared for a \$1,000,000 tube plant at Ellwood City, Pa.

The Columbia Sheet Metal Co. will build a sheet metal plant at East Liverpool, O., to cost \$1,000,000.

Bavarian Building Conditions.

Munich, Germany, June 4.—The building trade and the trades connected with it have suffered decidedly by the war. Upon the declaration of war building activities came to a sudden stop. It was impossible to ship stores, cement, or iron by rail or by inland waterways, and shipping in the North Sea and the Baltic almost disappeared. The work on buildings already under way was temporarily discontinued. Landlords made as few improvements as possible, owing to the loss of rents, and there was no need for the big industrial concerns to erect new buildings. In the provincial districts building activities have not entirely ceased, as the farmers in districts where help and building material could be obtained at low prices took advantage of this circumstance, especially as they had a very good harvest last year. There was reduced activity in the cities in municipal building operations. The contractors suffered considerably under these conditions; contracts run for long terms, they have great stores of material on hand, and they have had to retain their technical staffs.

The quarry industry also can not be considered to be flourishing. Brick kilns are working at reduced hours. In the cement industry, business was satisfactory during the first part of the year in many districts. Orders came in as frequently as in the previous year, and the outlook for the future did not seem bad, on account of the many military buildings and waterways that were projected. The cement works of Bavaria gave a somewhat satisfactory dividend to their stockholders. They supply at present only 4 per cent of the whole demand in their district, and the union between these works and others of south Germany runs till 1925 for a share of 50 per cent, at least, of the whole demand. There will probably be a great demand for cement after the war.



Officers of N. B. S. A. Talk to Supply Dealers

Signed Letter Tells of Efforts of Board of Directors and Presents Opportunity for Retailers to Lower Insurance Rates.

Building Material Dealers of the United States:

Since the last annual meeting of the National Builders' Supply Association, held in Chicago in February and at which time the subject of mutual fire insurance as being applicable to the building material dealer was discussed, the board of directors of the association, its president and secretary have labored incessantly for the purpose of learning the details surrounding this feature of mutual co-operation, to ascertain, if possible, whether it could be incorporated along with the other work of the association. Several meetings of the board have been held during this time at which the subject has been thoroughly discussed and the matter has been investigated from every angle. As a result, the conclusion has been reached that the mutual fire insurance feature not only can be added to the other activities of the association, but that it should be and that without delay.

The investigation as conducted by the board has revealed in every instance that, considering the class of risk which the building supply dealer offers, he is paying far in excess of the proper rate, and that his only opportunity for relief from this burden is the assuming by the association of the mutual insurance plan.

Accordingly, a contract has been entered into between the association and the Central Manufacturers' Mutual Insurance Co., of Van Wert, Ohio, the latter being an organization which has since its conception in 1876 made a success of mutual insurance in the lumber, hardware and other like industries, whereby the members of the National Builders' Supply Association can, if they so desire, place their fire insurance with this company, and be assured of a guaranteed dividend of at least 25 per cent on their yearly insurance premiums.

Mutual insurance, if it is given any study at all by the individual who has insurance to place, must certainly appeal to his intelligence. It means simply the concentration of risks, and avoids the placing of the undesirable with the preferred. It guarantees an immediate saving to the insured and a gradual increased dividend each year, in accordance with added attention which is always given to his risk by the insured when handling it through a mutual company. In other words, the insured knows that the more attention that is given to his property to safeguard it the cheaper his insurance is going to be.

Further than this, the board of directors in considering this proposition has seen that the adoption of it by the association will not only result in a saving of dollars and cents to the members, but also that it will be a very effectual means of largely increasing the membership. We all know the benefits which can be derived from an association which is sufficiently large enough to demand attention.

There is only one benefit to be derived by the association itself, from the whole hearted adoption of this plan by its members, and that is a very material increase in membership. It is to be hoped that when the proposition is submitted to them, as it will be very shortly, they will give it every consideration. It goes to you with the unqualified endorsement of your board of directors, who have and will

continue to give it their hearty and active support.

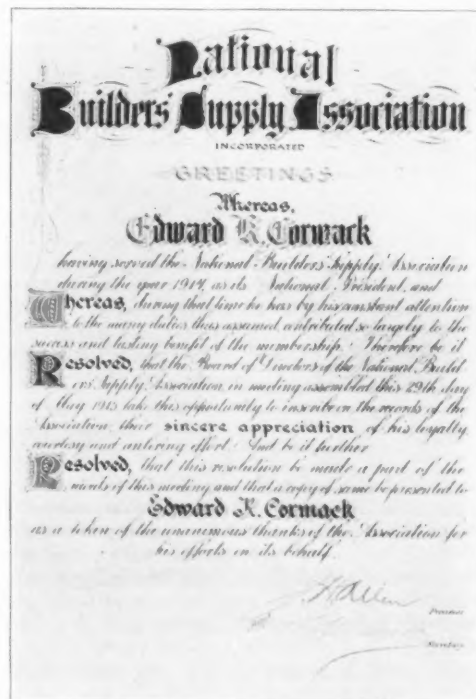
The opportunity is before us, and as a united body let us put our shoulders to the wheel and work with determination to improve our conditions.

NATIONAL BUILDERS' SUPPLY ASSN.

J. H. ALLEN, President.
L. F. DESMOND, Secretary.
W. W. CONEY,
W. A. FAY,
A. E. BRADSHAW,
C. N. RAY,
W. H. PIPKORN,
N. H. PARSONS,
D. J. KENNEDY,
C. M. KELLY,
B. L. GROVE,
J. J. VOELKEL,
Board of Directors.

N. B. S. A. Directors.

In appreciation of the excellent services rendered by Edward K. Cormack, while president of the



N. B. S. A. EXPRESSION OF APPRECIATION.

National Builders' Supply Association last year, the board of directors of that organization have caused to be designed and framed a set of resolutions commending him for his constant attention to the many duties and for his contribution to the success and lasting benefit of the membership.

The resolutions have been artistically written and in connection with a beautiful design have been presented to Mr. Cormack by President J. H. Allen and Secretary L. F. Desmond.

USE MEMBERSHIP LABELS ON MAIL.

Members of the New York State Builders' Supply Association are using the attractive label of that association on all outgoing mail. The design, which



is shown in the accompanying picture, was adopted by the organization at its meeting two years ago and since then labels have been printed by the state organization and sold to members at cost.

The design in the center of the seal has been taken from the New York state seal, the only difference between the two being the reading matter around the illustration. In the supply dealers' seal is printed the name of the association and the one word "Member."

A regular association office has been established by George D. Elwell, general manager, at Albany, where headquarters will be maintained for both dealers and manufacturers and where an information bureau will be established. The object in view is to make the association as valuable as possible to its members and incidentally to increase the membership.

ILLINOIS DEALERS ENTERING THE FOLD.

The predominant thought among a large number of dealers interviewed by Field Secretary H. S. Gaines recently was that the N. B. S. A. could be made the foremost factor for the general good of the trade if all the reputable dealers throughout the United States would join the association and "stick."

That the association is worthy of the cooperation of all is evidenced by the way new members are flocking in, and there is every indication that our next annual meeting at Cleveland will be of such magnitude and productive of such beneficial results that it can be truthfully said that the N. B. S. A. has direct authority to represent the majority of the recognized dealers in building materials in the United States.

There is every evidence that dealers are profiting by past mistakes and that they recognize the fact that internal wars work only to their own detriment and to the benefit of others. Confidence in the association will bring about a better feeling among members who are competitors and expressions along this line are more frequently heard than ever before in the building trade.

New Members.

Applications for membership have been received during the past two weeks from the following individuals and firms:

T. J. Wasson, Peoria, Ill.
Conklin, Rueling Co., Peking, Ill.
J. M. Allen, Eureka, Ill.
W. D. Harwood Lumber & Coal Co., Bloomington, Ill.
West Side Coal & Lumber Co., Bloomington, Ill.
Kuhn Coal Co., Bloomington, Ill.
W. J. Dambold, Bloomington, Ill.
Acme Supply Co., Inc., Newport News, Va.

The Sellers, Marquis Roofing Co., Kansas City, reports a nice increase in roofing supplies. They also handle other building materials.

The Wide Range of Usefulness of "S-A" Conveyors

is shown in an extraordinary manner by their application to this fleet of self-unloading ore-carrying vessels in service on the Great Lakes. The success of these installations is on a par with that of other "S-A" Conveyors in every field—Mining, Coal and Ash Handling, Sand and Gravel Plants, Crushed Rock and Mills of every description.

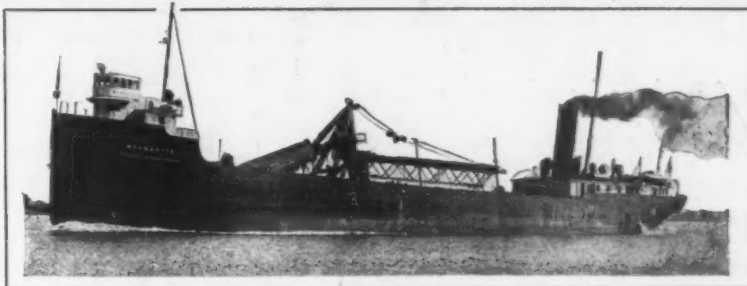
We are in a position to cope with any situation demanding Conveying Machinery, Screening Machinery or Power Transmission.

The two boats shown are equipped with automatic unloading conveyors designed and manufactured by us. The "Wyandotte" has a capacity of 600 tons; and the "Calcite," 1,000 tons per hour. "S-A" Steel Pan Conveyors are used in the holds, and these deliver to "S-A" Belt Conveyors carried on the swinging booms.

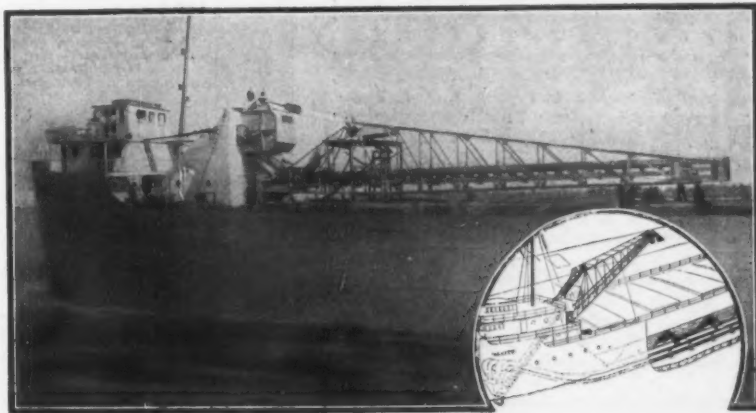
STEPHENS-ADAMSON MFG. CO. AURORA, ILLINOIS

New York, Chicago, Pittsburgh, Boston, St. Louis, Detroit,
Salt Lake City, Los Angeles, Huntington, W. Va. Toronto

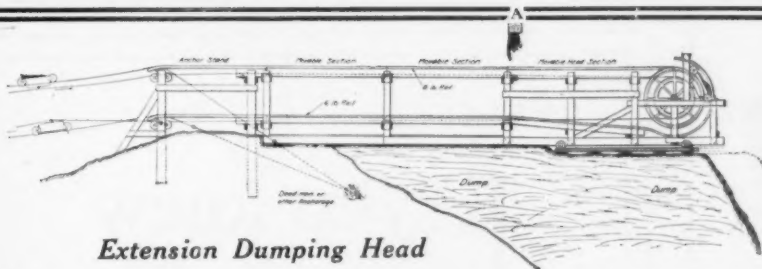
We design and manufacture conveying machinery for rock crushing plants, gravel washing plants, storage systems, etc. Also transmission and screening equipment, elevators, gates, feeders, car pullers.



THE "WYANDOTTE"



THE "CALCITE"



Extension Dumping Head

beyond. Ultimately this spoil bank will extend across the entire valley, a distance of 2,000 feet, and in the bottom of the valley will show a height of say 200 feet. Such a spoil bank will contain an immense amount of material and will serve for many years of continuous operation. In such a case it is most convenient to allow the tramway to extend itself along the top of the embankment which it creates.

The cables of the tramway are anchored permanently at the crest of the mountain. They deliver the car in the usual way to an anchor stand which in turn connects with a series of movable sections framed out of light timber and carrying a light T rail for the top and bottom lines. These sections may be made of any desired length, 10 feet being found practical in this case.

The removable sections connect to the frame of the dumping wheel which is mounted on flanged wheels running on a movable rail resting on temporary ties exactly like a steam shovel.

In dumping, the waste material is thrown away from the dumping head with considerable force and gradually builds up the embankment as indicated by the dotted line. When the embankment is so high as to interfere with free dumping it is roughly levelled off on the top by hand placing so as to receive the ties for the next shift. The dumping head is then disconnected at point "A," rolled forward on loose rails, say 10 feet, the length of a section and the gap filled with another section. One piece of haul rope is then taken out between any two cars and a correspondingly longer piece inserted. This completes the operation, the whole thing requiring an hour or so to shift.

The little piece of haul rope is not waste because when the dumping head is advanced a distance equal to half the interval between the cars a new car is coupled in to maintain the total capacity and the various pieces of haul rope, having been preserved are used over again on further extensions. In this way the tramway continually creeps ahead, using its own dump as a foundation.

We have a suspended terminal used under other conditions and still other requirements call for dumping cars. These will be considered separately.

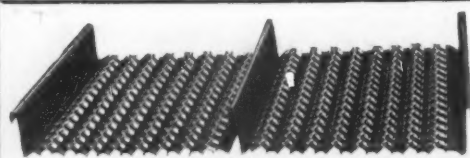
Respectfully submitted,

Tramway
Department

Ambursen Company

61 Broadway
New York

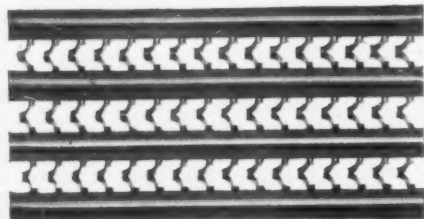
Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS



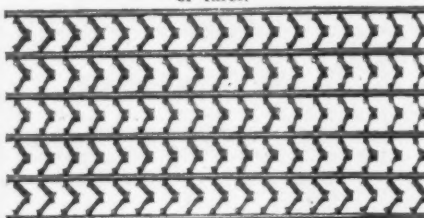
1 1/2" Hy-Rib—Very rigid. For heavy loads and wide spans.



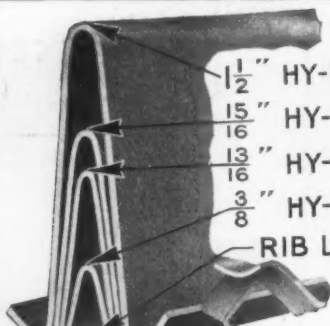
15/16" Hy-Rib for floors and roofs without forms. Sidings, partitions and ceilings without channels.



Beaded Plate Rib Lath—Permits two-coat work instead of three.



Standard Rib Lath in 3 gauges. Also "B" Rib Lath, similar in design.

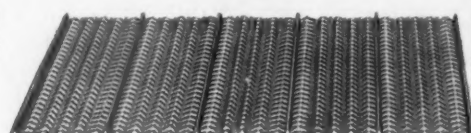


1 1/2" HY-RIB
15/16" HY-RIB
13/16" HY-RIB
3/8" HY-RIB
RIB LATH

It's the Strength of the Ribs that Counts.



13/16" Hy-Rib—Widely used in partitions, sidings and ceilings.



3/8" Hy-Rib Lath used as a self-furring lath and in partitions, ceilings, etc., for stud spacings 24 to 36 inches.

HY-RIB, RIB LATH, STEEL STUDS, Etc.

Hy-Rib is a deep-ribbed steel reinforcement and is manufactured in four depths from 1 1/2" to 3/8", and each of these in various gauges. **Hy-Rib** eliminates forms in concrete floors and roofs and eliminates channels in partitions, sidings and ceilings. 3/8" Hy-Rib Lath is widely used in connection with Kahn Pressed Steel Studs, permitting spacings of from 24 to 36 inches, in walls, partitions and ceilings.

Rib Lath is the stiffest steel lath and in the heavier grades permits two-coat plaster work instead of three—saving in time, labor and materials—also allows wide stud spacing. **Rib-Lath** is manufactured in three types and various gauges.

Detroit Diamond Lath—A diamond mesh lath furnished in various gauges and plain, painted or galvanized.

Kahn Pressed Steel Studs Channels without prongs are furnished in sizes from 3/4" to 2". Steel Studs with prongs for attaching metal lath are furnished in sizes from 2" to 6" are capable of supporting loads. Hollow Steel Studs made of two 3/4" channels united by spacers are furnished in 2", 3" and 4" sizes.

Kahn Pressed Steel Sill Plates, Angles, Furring Strips, Beams, etc., are made in many shapes and sizes to meet all building requirements.

Steel Corner Beads and Metal Base Screeds are furnished in various types and sizes for use in plaster work.

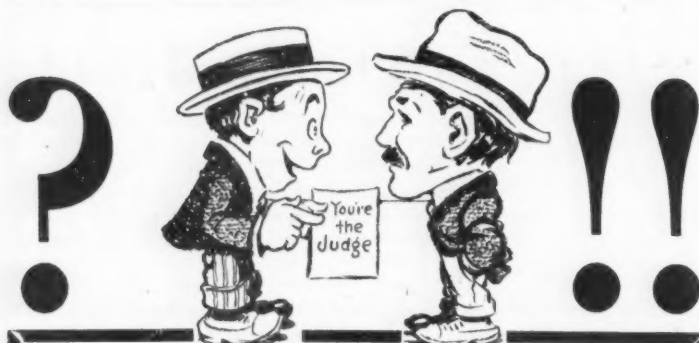
Our products fill your needs and save you money. Secure our estimates—Catalogue FREE.

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Representatives in Principal Cities

Kahn Pressed Steel Channel Studs, 2", 3", 4", 5" and 6".

KAHN Building Products
TRUSSED CONCRETE STEEL CO.



Judge Ceresit Waterproofing Compound from your own standpoint—from the contractor's standpoint and from the consumer's standpoint. Analyze its results, possibilities and reputation. Compare its price, application and service with any other waterproofing.

This analysis will prove to you that Ceresit is the easiest-selling, most profitable waterproofing for you to handle. It will prove to you that no other waterproofing accomplishes such wonderful results so economically. It will prove to you that architects everywhere have the utmost confidence in Ceresit to solve their most difficult waterproofing problems.

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IF you knew positively that you could free yourself from further bag trouble, and all delays and waste of money, you certainly would take steps toward that end. The Bates System Valve Bagger with valve paper bags for sacking Cement, Lime, Plaster, Alca, Ground Stone, etc., will do the work you want automatically and accurately fill and weigh every sack. 150 tons per day of lime—one machine.

Write for Particulars.

The Urschel-Bates Valve Bag Co.

TOLEDO, OHIO

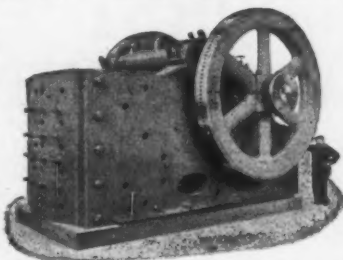
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NIAGARA FALLS, ONT., CAN.

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Superior Jaw Crusher

Designed for Use in Connection with Steam Shovels with Feed Openings 24"x36" to 84"x60". Capacity up to 700 tons per hour. Write for Catalog P M 4-58.



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Rock Crushing Machinery, Mining and Smelting Machinery, Cement Making Machinery, Wood Impregnating Plants, Loomis-Pettibone Gas Generators, Suction Gas Producers, Cyanide and General Steel Tank Work, Woodbury Jigging System, Lead Burning.

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The Raymond W. Dull Company, 1912 Conway Bldg., Chicago, Ill.



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WELLER-MADE

DELIVERY GATES

Undercut Overcut Duplex Plain or Special

SCREENS :: ELEVATORS

Everything for handling Sand, Gravel and Crushed Stone

Weller Mfg. Co., Chicago



Undercut Bin Gates



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Excelsior Caen Stone Cement

exactly reproduces the soft, pleasing buff color of the famous quarried French Caen stone, at only a fraction of the cost.

Replaces expensive marble in lobbies, hallways and assembly rooms. More distinctive and "classy" than ordinary plaster finishes. Makes handsome flower boxes, garden furniture and mantels. The demand is increasing rapidly. Be posted and get your share of the profits.

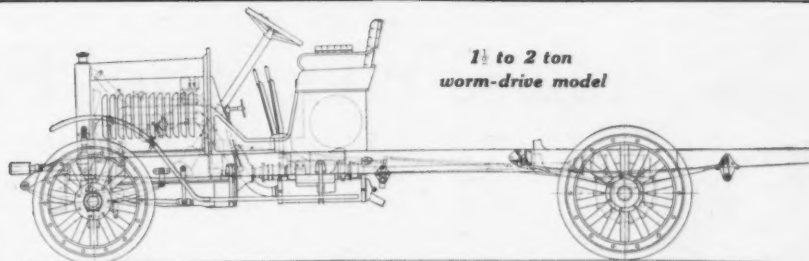
A card will bring
our literature and samples.



The Cleveland Builders Supply Co.

Manufacturers

Leader News Building Cleveland, Ohio



1 1/2 to 2 ton
worm-drive model

The New Line Now Includes 7 Models 1000 lbs. to Six Tons

After a careful and scientific study into all phases of haulage requirements, we announce an increase in our line to 7 models—ranging from a 1000-lb. delivery body to a 6-ton truck. The new line of Kisselkar Trucks is designed to supply most economical delivery under every haulage condition which may arise.

KISSELKAR TRUCKS

SEVEN GREAT MODELS

Here is the new line and chassis prices:

1000 lb. delivery	\$ 950
3/4 to 1 ton truck	\$1500
1 to 1 1/2 ton truck	\$1750
1 1/2 to 2 ton truck	\$2100
2 1/2 to 3 ton truck	\$2750
3 1/2 to 4 ton truck	\$3350
6 ton truck	\$4350

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The specifications and details of this wonderful range of trucks are so important that it is impossible in this announcement to more than ask that those interested write at once for complete literature.

For Your Business Learn in detail the construction of these great trucks—both worm and chain drive models—and their adaptability to your peculiar problem. They are the most modern trucks on the market.

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AMERICAN GYPSUM BLOCKS

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Ask Fritz, the Foreman

on any housebuilding job, what he likes to see delivered at the work for use as a wall base for interior plaster or outside stucco, and nine times out of ten he'll say:

Kno-Burn
Expanded Metal Lath

The foreman is responsible for the job. That's why he is strong for a lath that he can rely on. He's willing to stake his reputation with his boss, the architect, and the owner on the plaster gripping mesh of "Kno-Burn."

It's easy to sell builders what they want. And if what they want can be handled easily and profitably, that is what you want. You'll find the North Western line of metal lath ideal from your standpoint because it includes a style of lath for every class of work; is shipped promptly; and is always right in price.

Write today for Booklet 293 and get posted

NORTH WESTERN EXPANDED METAL COMPANY

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Chicago, Illinois

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

Annual of American Testing Materials Society

The eighteenth annual meeting of the American Society for Testing Materials was held at Atlantic City, June 22 to 26, inclusive, with headquarters at the Traymore hotel. There was a very large attendance of the leading scientific men of the country who have liberally given of their best work for the promotion of the laudable purposes of the organization. The standardization of testing of the materials of construction has been the theme of study, deliberation and discussion in the broadest and most practical sense, and yet with the most careful application of the technique of the various problems involved, and always with the liberal cooperation of the manufacturers and producers of standard, marketable materials. The society has long been recognized as the chief forum of authoritative expressions with regard to the reliability of structural materials of all kinds.

At the recent election by letter ballot of the society the following officers were elected and were in charge of the meeting at Atlantic City: Professor Mansfield Merriman, of New York, president; General William H. Bixby, former chief of engineers of United States Army, vice-president, and the executive committee, consisting of James H. Gibboney, chief chemist of the Norfolk & Western railway; Professor W. K. Hatt, of Purdue University; J. A. Mathews, general superintendent Halcob Steel Co., and Edward Orton, Jr., Dean of Ohio University.

Professor Edgar Marburg, of Pennsylvania University, whose wonderfully efficient and careful work in the capacity of secretary and treasurer will without doubt be continued in that office, for to him must be ascribed much of the credit of the splendid record that the society has achieved.

The reports of committee investigations and recommendations covering the whole field of structural materials are regularly printed in the annual year book of the society, and only sections relating to matters of particular interest to readers in the field of fireproof building materials will be mentioned in this report.

The committee on standard specifications of Portland cement reported that it had received a voluminous report from the joint committee appointed two years ago, consisting of representatives of the American Society for Testing Materials, the American Society of Civil Engineers and the engineers' department of the United States government. The report as a whole had been received by the committee and afterwards referred to several sub-committees for further study and report. The committee had also decided to withhold all of the data collected from publication until the whole matter could be completed and presented in its entirety as a completely finished proposition. The sub-committee having in hand the consideration of the autoclave test decided that this test had no real bearing upon the hydro-calcium bond, and offered no improvement to the present test for soundness of cement. A recommendation was made that further investigation for determining the consistency would be advisable.

The report of the committee on standard tests of concrete and concrete aggregates was presented by Sanford E. Thompson, chairman, as follows:

Standard Tests of Concrete and Concrete Aggregates.

Committee C-9 has held three meetings during the year, at which there were present an average of eleven members. The work has been divided among nine sub-committees, each one being assigned to a specific field for investigation. The work of each sub-committee is outlined in this report. The method of procedure which is being followed in most of the investigations is to distribute series of tests to various commercial and college laboratories, with very complete instructions. These tests are arranged so that each series is duplicated several times and are designed to separate the individual variables, in order to determine one by one the specifications for each function.

In one series of investigations, which is of a distinctly scientific character and could not be handled satisfactorily

except through a definite series of research tests, the committee has employed a chemist to make research investigations under the direction of sub-committee V.

In the various tests we have been favored with the cooperation of the following laboratories: Columbia University, Cuyahoga County, Ohio; Harvard University; Gulick-Henderson Co.; R. W. Hunt Co.; University of Illinois; Iowa State College; Kansas State College; Lehigh University; Structural Materials Research Laboratory of Lewis Institute; Massachusetts Institute of Technology; New England Bureau of Tests; City of New York; New York Public Service Commission; Office of Public Roads; Ohio State University; Oregon Agricultural College; Pittsburgh Testing Laboratory; City of Philadelphia; Valparaiso University; Westinghouse, Church, Kerr & Co., and the University of Wisconsin. Other laboratories are considering undertaking this work the coming fall, including the Bureau of Standards, University of California, University of Cincinnati, City of Hartford, New York State, Raymond Concrete Pile Co., and Spackman Engineering Co. Even with this cooperation the field of our tests as laid out is not yet covered and the committee invites offers from laboratories not included in the above list to cooperate with us and take up one of our series.

The committee has been fortunate in having for preliminary use the results of the investigations carried on by the committee on specifications and methods of tests for concrete materials, of the American Concrete Institute, published in their journal for October and November, 1914.

At the first meeting of the committee it was voted that the work of these two committees be coordinated and that they act as a combined committee in making the researches and tests.

The work of committee C-9, as previously stated, has been divided among nine sub-committees. Their personnel and an outline of the work of each is as follows:

Sub-Committee I on Finance—H. A. Moore, chairman; O. P. Chamberlain, F. W. Kelley.

The work of this sub-committee consists in providing funds by means of which the expenses involved in the prosecution of the work of other sub-committees will be taken care of.

Sub-Committee II on Laboratory Tests for Concrete and Laws of Mechanical Mixtures—D. A. Abrams, chairman; F. W. Renwick, Arthur N. Talbot, M. O. Withey.

This sub-committee has outlined certain tests on concrete and mortars with the view of establishing the best practice in making and testing concrete specimens in the laboratory, effect of the effect of variations in the gradation of sizes of the aggregates on the strength and properties of the concrete. These tests cover a wide range and necessitate the making and testing of a large number of specimens. It is felt that only by making such tests exhaustive can information be obtained which will permit the drawing of definite conclusions. It is hoped that these tests will furnish information upon which can be based definite recommendations as to the practices which should be followed in testing concrete in the laboratory; and it is also hoped that definite conclusions can be reached as to the effects of certain variations in the gradation of the sizes of the aggregate materials.

The following series of tests have been outlined as a part of the necessary investigations:

1. Comparison of metal and wood forms for standard laboratory tests of concrete.
2. Variations in strength and properties of concrete throughout the batch.
3. Effect of different methods of tamping and compacting.
4. Effect of condition of storage of specimens for standard compression test of concrete.
5. Method of capping test specimens preparatory to testing.
6. Effect of gradation of sand.
7. Effect of varying ratio of fine to coarse aggregates.
8. Effect of varying sizes of fine to coarse aggregates.
9. Strength of mortar as affected by the form of the test specimens.

Sub-Committee III on Sampling and Testing Field Concrete—W. M. Kinney, chairman; O. P. Chamberlain, R. S. Greenman, R. J. Wig.

In laying out the work for this sub-committee it was found that on a number of the larger concrete jobs field tests are being made, but there seems to be no uniformity of practice in making, storing and testing the specimens. It was deemed wise, therefore, that this sub-committee select tentatively a method which seems to have the most merit, and recommend that wherever possible such tests be made.

The following tests have been outlined:

1. Comparison of four methods of storage during first two days after molding.
2. Comparison of methods of storage subsequent to first two days.
3. Study of the cold-weather effect on field specimens.
4. Comparison of prisms made in the field and in the laboratory with prisms cut from work.
5. It is considered within the realm of possibility that a portable core drill can be made to use in cutting test specimens from concrete already in place in the form of 6x12 or 8x16-inch cylinders.

Sub-Committee IV on Relative Values of Various Strength Tests—A. T. Goldbeck, chairman; R. S. Greenman, M. O. Withey.

In the field to be covered by this sub-committee there are certain fundamental problems which it is felt should be investigated as soon as possible. These may be stated as follows:

1. To establish the relative reliability of mortar strength tests for determining the suitability of sand for use in concrete.
2. A determination of the most desirable size and shape of mortar test specimens and the relation of tension to compression.
3. A determination of the most desirable size and shape of concrete test specimens.

Sub-Committee V on Impurities Affecting Fine Aggregates—F. W. Kelley, chairman; D. A. Abrams, Lewis R. Ferguson.

The work of this sub-committee is as follows:

1. In securing samples of fine aggregates which have shown abnormal results when used for concrete.
2. To make tests on the samples secured with the view of determining the cause of the peculiar action noted.
3. To find, if possible, an economical corrective for such peculiarities.

In order to secure samples for this investigation, letters were addressed to a large number of persons throughout the United States and Canada, who it was thought might be able to assist in supplying samples of sand which would be of economic importance if the impurities could be removed. Considerable information has been collected concerning sands of this kind. Several samples have been received and are now being subjected to preliminary tests. The tensile and compressive strengths of mortars made from each of these sands will be compared with mortar from standard Ottawa sands, using various brands of Portland cement. Chemical analyses will be conducted on the foreign material in the sands, and an effort made to discover some method of treatment which will remove the defects. In searching for a corrective, the commercial aspect of the problem will be kept constantly in mind so that the method of correcting used for each sand will be practical and the most economical one available.

Owing to the extremely technical nature of the tests involved in this investigation, a chemist has been employed by the committee to carry out the chemical work under the direct supervision of one of the members of this sub-committee.

Sub-Committee VI on Methods of Tests for Voids, Weights, Density, Specific Gravity and Consistency—Cloyd M. Chapman, chairman; A. T. Goldbeck, G. L. Lucas, J. L. Miner.

In the standardization of certain of these tests the committee is cooperating with other committees of the society in order to arrive at specifications which will apply to all classes of work. The first series of tests laid out has been with reference to methods of determining weights and voids.

The variables to be standardized are (a) size of measure; (b) method of filling; (c) condition of sand.

(a) Four sizes of measures are being tried of the following capacities, 100 cc., 1,000 cc., $\frac{1}{4}$ cu. ft., and 1 cu. ft. in order to find out whether it is necessary to make weight determinations on a large sample, such as $\frac{1}{4}$ cu. ft. or more. If smaller measures, such as 100 cc., or 1,000 cc., give equally concordant results, they will be more easily used in the laboratory. The two larger sizes of measures are being tried in cylindrical and cubical shapes.

(b) Seven more or less different methods of filling the measures are being tried out. Each method as outlined has been in use by laboratories testing sand and each gives results differing more or less from the others.

(c) Two sets of determinations on condition of sand are being made: one with the sand dried at room temperature, the other with damp sand. Samples of two kinds of sand have been furnished by the committee to those performing these tests.

Sub-Committee VII on Methods of Tests of Coarse Aggregates—O. P. Chamberlain, chairman; Cloyd M. Chapman, H. A. Moore, F. W. Renwick.

The work of this sub-committee is the investigation of methods of tests to determine the suitability of coarse aggregates for concrete to be used under varying conditions.

Sub-Committee VIII on Available Aggregates for Concrete—R. J. Wig, chairman; Lewis R. Ferguson, W. M. Kinney.

The work of this sub-committee is the compilation of localities throughout the United States where concrete aggregates are available. The cooperation of geologists of the United States Government in the various States will be solicited and also the assistance of engineers. The efforts of the committee will first be devoted to States in which there are few deposits of available aggregates.

Sub-Committee IX on Definitions—Lewis R. Ferguson, chairman; J. L. Miner.

The work of this sub-committee is as follows:

1. To collect as many of the definitions as it can secure which are pertinent to the work of committee C-9.
2. To endeavor to secure the cooperation of all committees pertaining to concrete or correlated subjects of the various engineering societies in this country, with a view toward standardizing definitions pertaining to the testing of concrete and concrete aggregates.

All of the investigations as outlined above are under way. Detailed methods of tests together with definite instructions have been forwarded to a large number of colleges and commercial laboratories throughout the United States.

A paper entitled "The Microstructure of Concrete," by Nathan C. Johnson, profusely illustrated by stereopticon, proved to be very interesting, although the deductions that there were many unhydrated particles of cement to be found in concrete under many varying conditions was found to be not well taken by several of the most distinguished experts present, who ascribed such irregularities to shrinkage more than to any other fault.

P. H. Bates, of the United States Bureau of Standards, presented a paper entitled "The Effect of Finer Grinding and a Higher SO_3 Content Upon the Physical Properties of Portland Cement," which the author summarizes as follows:

The question of the finer grinding and the addition of more SO_3 to Portland cement is frequently discussed, and the consensus of opinion seems to be that further investigation is needed. In the present paper ten commercial cements have had more SO_3 added to them, have been ground finer, and have been both ground finer and had more SO_3 added. From the four groups of ten cements each, the customary physical tests and small specimens have been made. In addition cylinders of 1:1 $\frac{1}{2}$:4 $\frac{1}{2}$ concrete have been made, and expansion bars of neat and 1:3 standard sand mortars. Some of the neat tension briquettes have also been examined microscopically for relative amounts of hydration.

The results show that the time of set is affected somewhat by each of the above treatments, finer grinding tending to produce a quicker set, and the addition of more SO_3 a quicker initial but slower final set. The addition of SO_3 to the coarser-ground cements does not materially

affect the strength; finer grinding produces considerable increase; while the addition of SO_2 to the finer-ground cements tends to produce results very slightly less than those obtained when they contain the normal amount. Expansion measurements show that the addition of SO_2 to the coarse cements produces a large increase in length of neat cements; to finer-ground cements the increase is not so great. Finer grinding alone does not materially affect the expansion due to hydration; the expansion of the mortar bars is not materially affected by the use of the different cements.

All conclusions made in this paper are deduced from results obtained from specimens tested at the end of ninety days. Specimens have been made to be tested at the end of six months, one year and two later periods, and consequently the present conclusions may have to be materially modified. The results of the six-month specimens will be presented at the coming meeting of the society.

"Weight-Volumetric Proportioning of Concrete Aggregate in Testing," by A. J. Kitts, may briefly be described as follows:

The process of making concrete may eventually advance to such a stage of exactness that the proportioning will be done by weighing the materials rather than by the comparatively crude method of measuring them by volume. Then, as now, we should consider the volumetric proportions, as aggregates vary in character, specific gravity, percentage of voids, etc., so that certain weight (or volumetric) proportions suitable for one rock and sand are not adaptable to another.

The utility of a knowledge of the specific gravity and percentage of voids of a material, in determining volumes of that material by weighing, has not been appreciated. It is the object of this paper to describe the method of weight-volumetric proportioning, to point out its simplicity and importance, and to describe also a new method of progressive proportioning in opposition to the 1:1, 1:2, 1:3, etc., weight proportioning for cement-sand mortar, and 1:2:4, 1:3:6, etc., for concrete.

The metric systems of weights and measures will be assumed in the formulas cited.

"An Investigation of the Strength and Elastic Properties of Concrete-Filled Pipe Columns," by F. W. Swain and A. F. Holmes, was the subject of a paper covering the following interesting matters:

Tests made on concrete-filled pipe columns, filled by the jolting process, showed the columns to have a definite elastic limit and up to this load to be perfectly elastic, the steel pipe preventing permanent set from taking place in the enclosed concrete.

The concrete blocks made by this process were also found to have an elastic limit, although permanent set was found at the lowest loads.

The column loads at the elastic limit were distributed between the concrete and the steel, and it was found that the former checked almost exactly the stress at the elastic limit obtained by testing the blocks of plain concrete.

The results of these tests would indicate that a load of 25 per cent of the ultimate could be taken as a safe working load, which conforms very closely with the present practice.

Similar tests on larger columns are needed to complete this series, and especially tests on columns containing a steel core.

The committee appointed at the last meeting of the society on standard specifications for gypsum and gypsum products reported through its chairman, R. J. Wig, to the effect that the committee had been organized in December, 1914, and its work outlined as follows by the appointment of five sub-committees: (1) On gypsum for various uses, H. A. Brown, chairman; (2) on gypsum plasters, DeL. Heigh, chairman; (3) on structural gypsum products, chairman to be appointed; (4) on testing methods, W. E. Emley, chairman; (5) on nomenclature, S. G. Webb, chairman. As these sub-committees have only been organized a few weeks they were not prepared with a report further than the progress indicated by the completion of this organization.

The report of the committee C7 on standard specifications for lime as printed in the Year Book for 1914 as a tentative specification was approved and passed on to letter ballot of the society.

The standard specifications for brick and paving brick as proposed by the brick committee were

approved and passed to letter ballot of the society.

Professor Orton's paper, entitled "The Legal Interpretation of the Word 'Vitrified' as Applied to Ceramic Products," awakened a great deal of interest and discussion, because it had an important bearing upon the work of all of the other committees dealing with ceramic materials. The paper was referred to the committee on brick with instructions to confer with all other committees studying clay products for further study and report. Space will be found for a full text of this paper in a future number.

The committee on the standard specifications and tests of clay and cement sewer pipes reported progress and proposed a tentative recommended practice for the laying of sewer pipe, which was referred to the letter ballot.

The committee on standard tests for road materials recommended standard definitions of terms applicable to materials relating to roads and pavements, which were referred to letter ballot of the society, while the nine definitions on nonbituminous materials were referred to a conference committee composed of representatives of the road committee and the committee on concrete and concrete aggregate. The proposed tentative method for determining the penetration of bituminous materials recommended by the road committee was ordered printed in the Year Book.

ASKS FOR DELEGATES TO ROAD CONGRESS.

Invitations are being sent by the executive committee of the Pan-American Road Congress, the chairman of which is Hon. Charles W. Gates, governor of Vermont, to the governors of each state, to the lieutenant-governors of the Canadian provinces, and to the presidents of the South American republics, asking them to attend in person and to name delegates to the congress which is to be held in Oakland, Cal., Sept. 13-17, 1915. This congress will be held under the joint auspices of the American Road Builders' Association and the American Highway Association, in cooperation with the Tri-State Good Roads Association, the membership of which covers the states of California, Oregon and Washington.

It is expected that delegates from every state and Canadian province, and a large number of the South American republics will attend this great gathering in the interest of good roads. The program which is being prepared covers thoroughly the subject of road building and street improvement. The papers and discussions will be handled by the men who are the acknowledged experts in their respective lines. It is believed that the congress will bring together the largest number of men interested in highway and street improvement ever assembled at any time or place. Special trains are being arranged for the accommodation of delegates from the East.

The plans for holding the Pan-American Road Congress are in the hands of an executive committee of five, of which Governor Charles W. Gates of Vermont is chairman. Major W. W. Crosby, former state highway engineer of Maryland; James H. MacDonald, former state highway commissioner of Connecticut; J. E. Pennybacker, chief, division of economics, U. S. Office of Public Roads, and E. L. Powers, editor of "Good Roads," are the other members of the committee.

HANDBOOK OF INDIA FOR MANUFACTURERS.

An export field that has not in the past been given adequate consideration by American manufacturers—a field moreover of almost limitless potentialities—is that of India. That empire, by reason of its vast population, its splendid (even if unequally distributed) resources, and the new wants created by the gradual development of modernity among an ancient people, presents to the American exporter a singularly attractive opportu-

nity for the exercise of his commercial energy and acumen. It is a land where poverty exists by the side of almost fabulous splendor; where famine may succeed a time of plenty; where the intensity of tropical heat and the great rains of the monsoon cause strange conditions in the preservation and sale of merchandise; where religious beliefs or racial traditions may constitute the determining factors in the marketing of goods.

India has been characterized by a recent writer as "the treasure sink," and to an American commercial traveler it seems "like a bottomless pit, into which supplies may be sent in an endless stream." Certain it is that the Indian field is eminently worth cultivating, and that to work it effectively much information is needed, of a specific and not always readily available kind. Those engaged in the furtherance of American foreign trade have been devoting to it the most thorough and painstaking attention, and to these investigations a special timeliness has been imparted by the European war. India, in 1913-14, imported from Germany and Austria-Hungary, respectively, \$41,092,000 and \$13,920,000 worth of goods.

India has a population of 315,000,000, and an area of 1,802,192 square miles. Its imports in 1913-14 amounted to the enormous total of \$594,517,000, of which the United States furnished only \$15,542,000. The value of American products consumed annually in India is less than \$0.04 per capita. Persons qualified to form an authoritative opinion believe that this should be very materially increased.

In an effort to stimulate interest in the Indian market and to emphasize the salient aspects of the trade, the Bureau of Foreign and Domestic Commerce has just issued a handbook of about 640 pages, dealing with the resources, industries and commerce of India. This book contains many illustrations, a large detailed map, and facts concerning a multitude of Indian activities and conditions. It describes thoroughly the trade in all important imports. Every subject having a bearing on trade and its expansion has been covered. There are interesting accounts of the Native States, and of Ceylon, Afghanistan, and Tibet.

This volume, which is regarded as one of the most valuable publications ever prepared by the Bureau, is entitled "British India," and is Number 72 in the series of Special Consular Reports. It may be obtained for \$1 from the Superintendent of Documents, Washington, D. C.

MAKING MONEY ON DELIVERIES.

"Many motor truck owners are making their deliveries for less than nothing," says H. C. Branstetter, of the KisselKar.

"Sounds rather incredible, doesn't it? Well, here is an instance: H. P. Kantzler, of Detroit, owns a 1,500-pound KisselKar truck, which is kept going in his plumbing business from 7:30 in the morning until 3:45 in the afternoon. Its superior speed and reliability gives it a ground-covering advantage over three ordinary horse-driven rigs. This is a record which in itself handsomely justifies the truck.

"But Kantzler has found that a good truck not only saves time and money, but can be turned into actual cash profits as well. Every morning, from 4 to 6, he leases his truck to a newspaper for wholesale deliveries, and in the afternoon, from 4 to 6, to a packing company which requires extra haulage equipment during those hours. The amount received for this service more than pays the running expense of the vehicle."

Eighty KisselKar trucks left the factory of the Kissel Motor Car Co. in one train load last week. The entire train was made up of flat cars, two trucks being loaded on each car. The shipment was consigned to the government of Serbia and consisted of 30 ambulances and 50 heavy service vehicles for commissary use.

CONCRETE

Solution of the Housing Problem

The ever-present housing problem in a country like ours, which is rapidly increasing in population, is a matter of the greatest importance. In such a case no principle of economy is comparable with that of permanence. Experience has demonstrated the folly of building temporary structures as an investment proposition. Insurance, taxes, water, gas and electric service have piled up steadily in the past decade or two so as to make the amount of money involved in the construction of the merest temporary shack that can be rented to a working man or laborer cost almost as much as a permanent structure that will sustain its money-earning characteristics with reasonable repairs.

In this connection concrete offers very many advantages which have never been reasonably considered or applied. Probably one of the principal reasons is that the cement industry has always been able to find a ready sale for all of the available product of its mills in directions where a smaller amount of creative work was necessary in the indispensable preliminaries of introducing to the knowledge of the general public the basis advantages inherent to concrete as a structural material for small buildings such as are always contemplated in every extensive housing proposition. No thinker could contemplate the destroyed areas of a conflagration like that which occurred at Salem, Mass., about a year ago, or the one at Chelsea a few years previous to that, without concluding that some other material than wood, which was universally employed in the construction of those buildings that were burned, will have to be developed and adopted. This is particularly important in all heavy manufacturing centers.

The temporary character of the average domicile throughout this country, taken as a whole, is really appalling, and the gigantic totals of insurance premiums which are faithfully based upon the average risk, deduced from experience, constitute one of the most stupendous items of waste of money that we have with us as a part of our system of civilization. With very few shining exceptions all of the factory construction of the country is composed of the very flimsiest type of wooden construction. Invariably is the little home of the working man and the laborer a mere wooden box tacked together, with a shingle or a paper roof. Even palatial residences are constructed more substantially of wood and their inhabitants can truthfully be said to be dwellers in wooden walls.

The interest of the cement industry in the improvement of the housing conditions is two-fold. First, as an important industry it has the opportunity of demonstrating to the public and for the benefit of the public the very great improvement of incalculable value that will be highly appreciated, because it makes the produced and earned dollar safer, and for that reason reach farther. Second, it makes a new feature of demand for cement, which once being firmly established will consume a very large fraction of the total output of the mill in the shape of a steady and constant demand that would require little or no exploitation to keep as a regular customer because of the large number of individuals making up the general public who would constitute the demand for material when directed into such channels.

David O. Saylor, the patriarch of Portland cement in America, must be credited with having had a great deal of foresight. He was indeed a man ahead of his time. At the Centennial Exposition at Philadelphia in 1876 there was only one brand

of Portland cement made in this country on exhibition, that of Mr. Saylor, and his brand at that time was 10 years old. He was the real pioneer of Portland cement, and it is still manufactured at the same plant and some of the first customers are still handing it out to the trade with the same satisfaction that was established by the pioneer. It was in 1880 that Mr. Saylor put into practice his opinion, developed from suggestions made at the Centennial Exposition, with regard to the use of Portland cement and concrete made therefrom as a housing proposition. He built a row of houses in Allentown, Pa., for the use of employees of his cement mill, and they have proved to be a complete success in every way, especially from the standpoint of the investment. The row of houses



WORKMEN'S HOUSES BUILT AT ALLENTOWN, PA., IN 1880, SAYLOR CEMENT BEING THE MATERIAL USED.

in Allentown, illustrated on this page, are intact and occupied today and paying the owner a satisfactory revenue. The design and character of the buildings are in keeping with the period of 1880 and are quite as useful and in all respects as serviceable as when they were first built.

The advantage of this illustration shows the high percentage of value that attaches to a concrete building that has seen 35 years of service and for that reason is far superior to any more recent structure that could be used as an illustration. It is easy for any one to realize that permanent buildings of similar size upon modern lines could be just as easily constructed, and probably much cheaper than were these modeled after the styles prevalent and preferable 35 years of age.

The tendency at the present time is to build a low, squatty house of the bungalow type, where there is sufficient space for such an idea to be adopted, and for such a house there is no better, cheaper, or satisfactory material than concrete in one of the many forms in which it is available in almost every locality. In mill towns especially,

where the housing problem is most acute, the labor problem of a big mill can often be solved by providing comfortable, sanitary and attractive homes for the mill operators to live in that they can have at prices within their means. In all such localities the prices of lots are very low, so that the concrete bungalow type of buildings becomes available and is at once the most economical and attractive thing of the kind that can be produced and offered as a solution at once of the housing problem and the attraction of a better class of labor in the mills.

In these times when practically every labor union is shouting and clamoring for better living conditions the housing problem becomes a more important factor, and those captains of industry who give some thought and careful direction to the improvement in the type of houses available for their employees will reap harvests of satisfaction that will show upon their balance sheets ultimately, and it is a feature well worthy of promotion with all of the intelligence and concentration that the cement industry is able to throw into the accomplishment of a great public benefit, which is incidentally some day to become the most valuable feature of the distribution of the wonderful product that is turned out of Portland cement mills.

NEW INCORPORATIONS.

The Central Ohio Concrete Co., Columbus, O., has been incorporated by C. Flynn, Max Goldsmith, W. A. James, L. A. Langley and H. E. Kunzman, with a capital stock of \$10,000, to conduct a general concrete construction business.

The Piqua Concrete Products Co., Piqua, Ohio, has been formed by Forest E. Grimes and Chester C. Elliott. Concrete blocks faced with marble dust, to make a uniformly white block, will be a specialty. All kinds of concrete building products will be produced.

The Triple State Concrete Tie & Mfg. Co. has been incorporated at Charleston, W. Va., with a capital stock of \$100,000, by A. S. Alexander, T. W. Woodward, and others. The company proposes to manufacture a concrete tie.

F. W. Reichenbacher, Manhattan, New York City; capital, \$5,000; to manufacture composition marble; incorporators, Fred R. Reichenbacher, 1077 Sterling place, Brooklyn; Lillian Reichenbacher, Brooklyn; Max Strench, New York.

CEMENT

Cement Industry Improving

The year 1915 opened with decidedly slack conditions in the cement industry, the latter part of 1914 having shown a large falling off in production and a still larger reduction in shipments of Portland cement than the corresponding period of the preceding year, as reported by E. F. Burchard, of the United States Geological Survey, and the net result for 1914 was a slight decrease in both production and shipments—the first yet recorded. The average price at the mills also decreased.

At the beginning of 1915 there was little new construction work in sight; few cement manufacturers felt optimistic concerning the outlook and some even prophesied a further decline in volume of business for 1915.

The general developments of the early months of 1915 were not such as to dispel the glooms from all of their lodging places, so that the rate of production of many mills was cut down below that of shipments in order to effect a partial clearance of the large stocks that had accumulated during 1914. In general, however, there has been an improvement during the second quarter of 1915, the rate of production of Portland cement having gradually increased, and although there are no statistics available for the first half-year it is believed that, as compared with the corresponding period of 1914, no appreciable gain or loss has occurred. If this be true, then conditions really are better than were anticipated by the majority of producers at the beginning of the year, and, if no unforeseen conditions arise seriously to affect business, the next six months should show an improvement over the first half of the year.

The cement industry is particularly subject to local conditions, especially in inland districts, since cement is too bulky a product to be shipped in great quantities by rail into competitive territory, except under extraordinary circumstances. Naturally, therefore, certain districts, such as those that produce cotton and those in which industrial agitation has recently checked progress, have felt the depression more keenly than the average localities, while in districts where large public works are in progress or where advantage is being taken of the apparently favorable prices of structural materials in order to push extensions of factories and new construction work, the production and shipments of cement have increased. Thus the conditions in the cement industry are in strong contrast between the Gulf states and the Rocky Mountain states on the one hand, and New York, Pennsylvania, Ohio, West Virginia and Michigan on the other hand.

LEHIGH HOLDS ANNUAL OUTING.

The annual outing of the office force of the Lehigh Portland Cement Co., Allentown, Pa., was held on Saturday, June 26, at Neff's park. This affair has long been the banner event of the year in Portland cement circles in the Lehigh valley and visions of savory clams and other delectable dishes cause the Lehigh boys to anxiously await the time for the outing to roll around each year.

The great event of previous years, and which caused the greatest amount of enthusiasm was, however, made conspicuous this year by its absence. This was the annual ball game between the office force and the mill department. The management

of the two departments found it impossible to get together this year, so instead of the ball game other athletic events held the attention of the picnickers.

The entire party left for the park about one o'clock in the afternoon on special cars provided for the occasion. During the afternoon luncheon was served, and those present participated in many good-natured frolics. As usual, the Allentown band accompanied the merry-makers and discoursed lively music from the pavilion during the afternoon. The final event on the program was a huge clam bake, which certainly proved to be an efficient termination of a wonderful afternoon of fun. The entire party numbered about 200 persons, including many branch office representatives and guests. William Wieder, of the auditing department, had the affair in charge and certainly proved to be a capable master of ceremonies.

What the Manufacturers Are Doing.

Rumors, persistently circulated at Staunton, Va., are to the effect that the DuPont company has bought the great Augusta cement plant. The rumored purchase has been common talk for a week or more, but to date it has been impossible to secure either official confirmation or denial.

H. E. Powell, Trenton, N. J., of the Association of American Portland Cement Manufacturers, recently visited Miami county, Ind., and in company with the county board of commissioners inspected the Stilwell gravel pit near Dundee, Ill. Mr. Powell was much impressed with the quality of material to be obtained in the county for making cement.

Work has started on the construction of what is said to be the largest rock-crushing plant in the West by the California Portland Cement Co., at Colton, Calif., to be used in connection with its great cement establishment. The addition will cost \$150,000, according to the announcement of General Manager T. J. Fleming. The first carload of machinery for the plant has arrived. The California company has the contract for furnishing all the crushed rock to be used on the San Bernardino county highways under the \$1,750,000 bond issue and it is to supply this demand that the new plant will be constructed. It will have a capacity for a 10-hour day. In addition three electric locomotives will handle the trains that transport the boulders to the crusher. They are to weigh nine tons each and are being built by the General Electric Co. The crusher will be in operation by August.

SIMPLIFID SPELING FOR UNIVERSAL.

On June 25 the Universal Portland Cement Co., Chicago, entered the class advocating the use of simplifid speling by presenting to its officers and employees a list of the words which have been "abridgd." Hereafter an employee of the concern will receive his "check," not his "cheque." Dealers and contractors will be presented with "catalogs" instead of the "catalogues" of previous days. "Thruout" the "paragrafs" of "instrukshuns" the "praetise" of "abbreviating" everything "posible" will be "thoroly folod." Even the "kemist" will be obliged to "folo" this "program," as the list contains the words "sulfate" and "sulfur."

This simplifid speling will be used in all printed publications of the company, and is recommended to all officials and heads of departments for their correspondence.

Cement Prices Advance.

Reports from all sections of the East and Central West indicate a uniform advancement of Portland cement prices about July 1. East of the Allegheny mountains an advance of 10 cents per barrel was put into effect, while west of the mountains only a five-cent raise was put into effect.

In Chicago the advancement was first reported on June 28, when the price to contractors was placed at \$1.16 net and \$1.56 in bags per barrel.

New York, July 3.—Prices of Portland cement in this market advanced 10 cents on the first of the month. This brings the price up to 75 cents, mill, or \$1.45 in wholesale lots, New York. It is generally believed that the price movement here will continue to be upward and that by Sept. 1 at the latest the mill price on the Lehigh Valley base will be 90 cents a barrel. That would make the price to dealers in New York and vicinity \$1.58, where the market was before the recent price-cutting war developed.

DEATH TAKES PIONEER MANUFACTURER.

George Ormrod, Allentown, Pa., anthracite coal operator, iron manufacturer, and pioneer in the manufacture of Portland cement in the United States, died of angina pectoris June 22 after an illness of a little more than a day. He was 76 years old and was born in Preston, England, coming to this country in 1859.

He managed collieries at Tamaqua and Beaver Meadows, built the Haven Run colliery in 1865, and was president of the St. Nicholas Coal Co. until 1880, when the company was sold to the Philadelphia and Reading Coal and Iron Co.

Along with Col. H. C. Trexler, Col. E. M. Young and others, in 1897, he organized the Lehigh Portland Cement Co., having previously, with his son-in-law, Thomas D. Whitaker, organized the Whitaker Cement Co., now the Alpha Portland Cement Co., at Alpha, N. J.

At the time of his death he was a member of the board of trustees of the Allentown Hospital, to which institution he had donated large sums, a trustee of the Y. M. C. A., member of the leading clubs of the Lehigh Valley, member of the Franklin Institute, Union League and Manufacturers' Club of Philadelphia, and a member of the American Institute of Mining Engineers. He is survived by one brother, a former mayor of Preston, England.

CEMENT WORKER PASSES AWAY.

H. S. Turner, superintendent of the Chicago Portland Cement Co.'s plant at Oglesby, Ill., died on June 22. Mr. Turner had been with the company a number of years and was largely responsible for the excellent quality of cement produced to the extent of 4,000 barrels daily. Under his supervision the seven kilns at the manufacturing plant were kept constantly in first-class condition and the entire equipment of the mill operated on the most economical and practical basis.

The Superior Portland Cement Co., of Seattle and Concrete, Wash., has been doing considerable overhauling of its plant and is now installing some new machinery, including a Hercules mill to replace a three-ring roll mill and an air compressor for the quarry.

Twenty-Six Ton Dynamite Blast at Dixie Plant

A blast, the previous announcement of which brought hundreds of persons from Chattanooga and surrounding cities to Richard City, Tenn., on Saturday, June 12, requiring 26 tons of dynamite, valued at \$9,000, was set off in the quarry of the Dixie Portland Cement Co. and precipitated into the quarry pit sufficient rock to supply the plant for several months. This was one of the largest, if not the largest, blasts ever made in a quarry. It tore out a mountainside 500 feet wide and 100 feet high. To accomplish this task holes were drilled 100 feet deep and six inches in diameter, into which the dynamite charges were placed. Seven months were consumed in preparation for the blast. It was witnessed by prominent business men of Tennessee, officers of the Dixie Portland Cement Co. and a number of moving picture operators, who claimed that at the explosion they received some "great stuff."

The long siege of hole-drilling, placing of the explosives, running of electric wires and other preparatory work was brought to a climax by the throwing of an electric switch which set off the blast. At the noon hour the company's big whistle announced by its shrill tones that the explosion was about to take place and as a result porches, windows and the roof of the hotel adjacent to the plant, as well as other advantageous positions, became filled with spectators. A reporter for the Chattanooga Sunday Times reports the result of the blast in the following interesting manner:

"First visible indication to the watchers that the current had been applied, was a quiet sinking of the cliff along its entire length—because the wiring was designed to affect the explosive at the lower extremity of the drilled holes. Then a great shower of stones rose into the air, hundreds of feet it seemed, and certainly to such a height that no one could well help wondering where they would fall. Another moment, and the air above the quarry was filled with limestone dust, which might have been taken to be smoke except that an instant after, when the smoke really did appear, it was of different color and much greater intensity. The visual phase of the exhibition was accompanied by much less noise than a layman probably would expect from such a volume of explosive. What noise there was came as a rumbling roar, and was not as significant of the cause as the vibration of the ground and buildings and rattling of windows.

"There was no untoward incident. Those who hurried to the quarry immediately were sorry that a ruling of the authorities, though probably sec-

onded by their own temerity, prevented them seeing the spectacle from a nearer vantage point. On the quarry edge opposite the dismembered cliff there were no newly fallen rocks or other evidences of the terrific explosion. Except for 'safety first' all might as well have been within a few score yards, like the movie operators and few others whose position with the company or business connection gave them the 'privilege.'"

Quarry Superintendent Spearman received many congratulations on the success of the big shot. He, President Richard Hardy and others connected with the works, felt well satisfied with the result of the labor and investment. The well-placed dynamite loosened enough limestone to keep the monster crushers and kilns busy for eight months or more, it was said.

Several boulders hurled from the solid cliff into the quarry pit seemed as large as average rooms in a dwelling, but, judging from the visible mass of stone, by far the greater part was reduced to more workable size. Without delay, after what to the laity seemed a tremendous undertaking worthy of a celebration, a force was put to work laying track so the stone may be conveyed to the "Big Bertha" crusher—first of the series through which the material passes before being reduced to flour-like fineness.

On the new face of the cliff were seen great vertical scars, only remaining trace of the holes drilled at such outlay of time and expense in weeks gone by. Chunks of stone in this freshly exposed surface lost their equilibrium and tottered into the pit.

Back to the hotel and very soon all visitors sat down to a typical Dixie-Portland a la Hardy dinner as guests of the company. Then the rain came—whether result of the big atmosphere-disturbing explosion or because it was needed to finish the fall of loosened stone on the cliff face, no one knew.

The great cement plant was practically shut down during the explosion and all hands ordered out of doors. The reason for this command was two-fold: The men were given an opportunity to witness the gigantic blast and were also protected from possible harm within the buildings. On other occasions when shots have been fired minor havoc has been played in the buildings. On one occasion a cave-in of cement stacked in huge piles took place in the warehouse and several machines were buried.

As a result of the activity on the part of the force of the Dixie Portland Cement Co. and other Southerners interested in cement, the increased use

of concrete in the vicinity of Chattanooga has been tremendous. The latest illustration of their work was shown in the policy of the new road commission, created by what is known as the "Spurlock Bill," to make Hamilton county's thoroughfares of concrete as fast as possible. The contract let for this commission provides for a two-and-one-half mile concrete road along the base of Lookout mountain, which has a good deal of steep grade. With the heavy grading work on the lower road the contract amounts to slightly more than \$100,000, although according to the county engineer concrete roads in Hamilton county with normal or light grading will not cost more than \$10,000 to \$12,000 per mile. Incidentally this new stretch of road will be a part of the Dixie highway if the route to Nashville by way of Rankin's Ferry is selected.

In addition to this road work there is now being erected over the Tennessee river at Chattanooga a half-million-dollar concrete bridge, and in other parts of the city there is in the course of construction four railroad viaducts, the Hogshead apartments, the Park hotel, a four-story concrete garage, grain elevators of the Mt. City Mill Co., and Queen & Crescent car repair shops, all of which will be concrete. The Southern railway, in improving its line in Chattanooga through the Lookout mountain tunnel, has built several concrete overpasses and is now building another, which is possibly the largest of the lot. At the all-year-round resort at Signal mountain miles of concrete sidewalks are being built to connect the hotel with adjacent points of interest and to develop nearby property.

CONSUMERS CEMENT CO. INCORPORATED.

The Consumers Portland Cement Co., with headquarters in New York City, has been incorporated under the state laws of Delaware with a capital of \$2,000,000, to manufacture, sell and deal in Portland cement, silica and lime. The incorporators are Joseph F. Curtin, Samuel B. Howard and S. A. Anderson, all of New York City.

HOUGHTON HEADS CENTURY COMPANY.

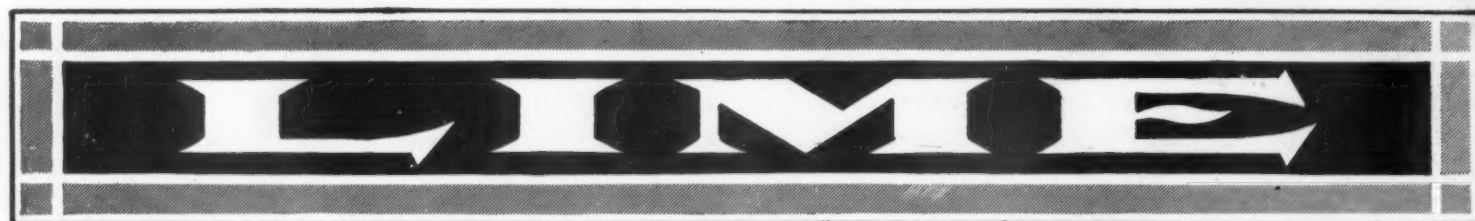
Previous to the incorporation of the Hagar Portland Cement Co. rumors were current in New York City that the name of the concern was to be the Century Portland Cement Co. The mystery as to this particular name was recently solved by the incorporation of a company with the latter name, with offices in the city of New York, and with a capital of \$10,000. Joseph H. Houghton is credited with being the prominent factor in the new company.



MOMENT OF THE BLAST.



AFTER THE BLAST.



The Woodville Method of Burning Lime

BY WM. URSCHELL,

Before the National Lime Manufacturers' Association.

We are the operators of 31 kilns located in the Toledo, Ohio, district. Dimensions of our kilns are: Height from the draw-pit to the top, including a five-foot cribbing, 34 feet 10 inches; height from draw-pit floor to firing floor, eight feet; from firing floor to top of brick work, six feet four inches; from top of brick work to extreme top of kiln, 16½ feet; a cribbing on top of same is 12 feet wide and five feet high, making a total of about 35½ feet over all. Diameter of steel kiln, nine feet; grate surface, three and one-half by four feet; grate bars, one and one-quarter by one and one-quarter inches square. These bars are dropped 12 inches below the firing door. Size of eye in arch: width 24 inches, height 22. Distance between inner kiln wall to furnace, 24 inches; distance of kilns between arches, four feet six inches, and the width at same point in kiln six feet six inches. The distance from the bottom of the firing arch to the neck of the kiln is seven feet, and the diameter of the neck is four feet six inches. The neck is three and one-half feet high and then widens out funnel-shaped to the top of the kiln, at which point it is seven feet four inches. Kilns are lined with a double nine-inch fire brick, and the top and cooler are lined with paving brick.

Our reason for having the oblong kiln is that after close inspection of the repair work we found that fire brick burned out first over each arch and on the opposite sides of the kiln—this resulting from the blaze, striking together and then spreading out in opposite directions. We then widened out the kiln at this point, and deemed it advisable to try to burn more lime rather than have the fire strike the fire brick, burning them out at that point.

The kiln is drawn together to a four and one-half foot neck, and our reasons for this are that we find that the four and one-half foot neck, three and one-half feet high, holds the weight of the stone. When the kiln is punched down and drops the stone cannot follow as readily through this neck; in other words, the stone lies very loose below the neck of the kiln. This gives a larger lime production and also a better draft. Were it not for the neck in these kilns and the kilns hanging when they are poked down, there would be a drop of about two to two and one-half feet, with possibly 12, 15 or 20 tons of stone above it, crushing the lime between the firing arches, where it would shut off our draft to a great extent.

We have three quorum of men operating 30 kilns—10 kilns to each quorum. One fireman, two poker men and one draw-man constitute a quorum per 12 hours, making a total of eight men per 24 hours for the operation of 10 kilns.

Kilns are drawn every four hours—the same producing about seven and one-half tons of lime each 24 hours. It is best to draw from the cooler about 1,300 pounds of lime, when the poker man pokes in the eye of the kiln and punches same down, which it usually needs. After the kiln is punched down the draw-man then removes 1,000 pounds or more, as much as the kiln will stand. As a safeguard on this point, if the kiln is hard to poke down, which means that there is lots of lime in the kiln, we usually draw out just a little more. If the kiln punches down easily, we draw out a little less.

This is a regulator, or, in other words, a safeguard for a new man, which we have followed out in all cases, as we find that when the kiln is limed up high it will hang harder, and we will, at that time, draw out more lime; if it drops on us unexpectedly, we will draw out that much less, after the 1,300 pounds are taken out.

We fire our kilns every hour and stir our fires on the half-hour. We carry a 12-inch bed of slack and have a force-draft by the way of steam and air under our grates, which is composed of a one-half inch steam line under a pressure of 20 pounds, with a one-quarter inch opening. This makes a steam jet of our own, having a regulator where we can give it more or less air.

We clean our grates every 12 hours by means of coking our coal from the top and removing some of the bars and stirring all the dead ashes out from underneath, then replace the bars and punch same down from the top.

For the last year we have produced on an average of four pounds of hydrated lime per one pound of slack for burning, and 40 pounds of hydrated lime per one pound of mine-run coal for steam, which is used in burning the lime.

STANDARD BARREL LAW EFFECTIVE JULY 1, 1916.

The bill recently passed by Congress making standard barrels for dry measures will become effective on July 1, 1916, and will affect all dry commodities shipped in barrels, including cement, lime and plaster, the three great staples of the building trades.

The dimensions of the standard barrel as covered by house bill No. 4899 are as follows: Length of staves, 28½ inches; diameter of heads, 17½ inches; distance between heads, 26 inches; circumference at bilge, 64 inches, outside measurement; thickness of staves not greater than four-tenths of an inch. It is further provided that any barrel of different form having a capacity of 7,056 cubic inches shall be a standard barrel.

This establishing the size of the standard American barrel upon the basis of volume, measures and the weights of all dry commodities with reference to the volume adopted, must be adjusted when sales are made by the barrel unit.

KILLED BY PREMATURE EXPLOSION.

James M. Connell, of Milwaukee, well-known superintendent of the Union Lime Co., was instantly killed by a premature explosion of dynamite at a quarry of the company at Marblehead, six miles from Fond du Lac, Wis., on June 22. Mr. Connell was a thirty-second degree Mason and a man with a wide circle of friends, to whom his sudden death came as a great shock. He was 59 years old.

Mr. Connell was tamping a charge of dynamite into a recently drilled hole, showing a workman how it should be done. As a result of the jar caused by the pounding the dynamite was discharged just as Mr. Connell was leaning over the opening. A

deafening report followed, and when the debris was cleared away the victim was found lying in a pool of blood, his head shattered beyond recognition. None of the three workmen who witnessed the accident was injured.

Mr. Connell was born in Germantown, Washington county, Wis., Sept. 1, 1855. He had been superintendent of the various plants of the Union Lime Co., of Milwaukee, for the past 15 years. He was also a director of the Farmers' and Merchants' bank of Menomonee Falls, Wis. Mr. Connell was a member of La Fayette lodge, No. 265, F. and A. M., Calumet chapter, No. 73, Ivanhoe commandery, No. 24, and the Wisconsin consistory. He was also a member of the Grand avenue Congregational church. Mr. Connell is survived by his widow and two sons, Harold W. and Kenneth J., both of Milwaukee.

Eastern Lime Market.

The weekly trade letter of The Lime Service Bureau, Washington, D. C., gives the condition of the Eastern lime market, as noted below:

Virginia: A midsummer condition of demand prevails in the Virginia district with average kiln operation no less than last week. Most all plants continue to report poor demand. Kiln operation remains fairly heavy at points manufacturing for storage.

West Virginia: Plants reporting from this district advise a good demand with all kinds in operation.

Maryland: Production for storage continues in the Maryland district, no shipments of any importance being reported at this time.

Pennsylvania: A fair to poor demand continues in the Pennsylvania district. Shipments of bulk lime continue fairly good, but hydrate and pulverized lime are not so good. Pulverized limestone practically at a standstill. Plants are storing for fall agricultural trade.

New England: The fair demand reported last week holds well in the New England district, but there still exists an uncertainty as to its stability. It is advised that this uncertain demand and a demoralized New York City market has featured the June lime business. New England trade has been fair with a better and more steady demand and without much price cutting. Outlook for July is fair. A conservative position is being taken by all builders.

MAY BUY VAST LIME PROPERTY.

William Gray, member of the Canadian Parliament from London, Canada, and a representative of one of the largest groups of capitalists in London, England, made known recently at his apartments at the Angelus hotel in Los Angeles, Calif., of a gigantic proposition which, when developed, will be one of the largest interests of this kind in the West. The deal will consist of the taking over by the capitalists of a tract consisting of about 700 acres. The property is entirely undeveloped, but contains all the raw materials for lime and cement.

Quarry News in Brief.

A contract for furnishing Milford, Ohio, with 1,000 yards of crushed stone was awarded to H. C. Lout, and work has been started.

C. R. RYDER APPOINTED RECEIVER.

Carroll D. Ryder has been appointed temporary receiver of the Sterns Lime Co., Danbury, Conn. The action which resulted in this decision was caused by proceedings instigated by Augustus G. Ising, et al., in the superior court last month. The matter was taken before Judge Williams on June 17 at which time Mr. Ryder was appointed receiver.

\$25,000 CONTRACT FOR LIME.

The contract for furnishing 7,000 tons of lime to be used in the filtration plant in St. Louis was awarded to the John Armstrong Quarry Co., of Alton, Ill. The lime will bring about \$25,000.

"REINFORCED CONCRETE IN PRACTICE."

Under the above title Scott, Greenwood & Son, technical book publishers of London, have issued a text book which should prove highly interesting and educational to men engaged in the concrete industry. The book is written in such a manner that it explains the details of reinforced concrete construction so they can be easily understood even by laymen. On the other hand it treats of many perplexing questions regarding grading and testing of materials and their use in the construction of large buildings and other intricate work, such as swimming tanks and huge columns.

Illustrations and tables are used extensively throughout the work and will undoubtedly bring to many concrete workers in this country, as well as in England, subject matter for a good many tests and experiments. The tables will also assist in the use of reinforced concrete in determining carrying weights, materials to be used, treating of surfaces and similar important subjects.

A. Alban H. Scott is author of the book and explains his reason for preparing the work in the following words: "While the author is of the opinion that there is no form of building so lasting and requiring less maintenance than reinforced concrete, he considers that it should only be employed when the work is under constant, careful and experienced supervision and when every material used in the work is tested. In the preparation of this book it has been assumed that its circulation will not be confined to any one section of the public, and efforts have been made to frame it so that it may be useful to all those interested in this form of construction."

Copies of the book, which should be in the possession of every one interested in cement and reinforced concrete, can be secured from the office of ROCK PRODUCTS AND BUILDING MATERIALS, 537 South Dearborn street, Chicago.

MACHINERY SALES.

The Howard-Cooper Corporation, of Portland, Ore., reports the sale of a large rock crusher which was shipped to the Tillamook Bay Construction Co., of Bay City, Ore.

C. B. Watrous, Spokane, Wash., representative of the Koehring Machine Co., has sold a Koehring paving mixer No. 16 to C. M. Payne, of Spokane, for use on a large paving job recently secured by Mr. Payne.

The Bucyrus Co.'s Portland, Ore., branch has sold a drag-line excavator for shipment to Fairbanks, Alaska, and a similar one to the Lena river district in Siberia.

CERESIT CO. HAS FLOOR HARDENER.

Samples of the Ceresit Waterproofing Co.'s new floor hardener are being distributed to retailers of the country and in many instances are being subjected to experiments which will test out the durability of floors topped with this material. General Manager F. A. Mitchell reports that he is very op-

timistic about the sales of the new floor hardener, as requests for samples for experimental purposes have been received in large numbers. Offices of the company are in the Westminster building, Chicago, Ill.

STEEL SASH FOR PROTECTION.

Using the words of Thomas A. Edison that "the big lesson of the recent fire at West Orange, N. J., has been the value of concrete construction and the need of steel window sash and trim and wire glass that withstands great heat," the Trussed Concrete Steel Co., of Youngstown, Ohio, has published a very attractive and convincing folder calling attention to the statements of Mr. Edison and to a recent test conducted in his presence and under his direction in which steel sash was constructed into a brick building and subjected to a fire of celluloid films and kerosene-soaked wood for 55 minutes. Not a sign of weakness was shown in the sash, and at the request of Mr. Edison the hose was played on the structure and still the glass and frame showed no signs of weakness. The folder is very well designed and amply illustrated, and contains

a list of the representatives of the Trussed Concrete Steel Co.

BULLETIN ON ROAD MODELS.

The Office of Public Roads of the United States Department of Agriculture has just completed Bulletin No. 220, on "Road Models." The book, which is generously illustrated, shows pictures of the various models that have been on display at the different road exhibits and at one time displayed in a special car chartered by the Office of Public Roads. The publication has been compiled under the direction of Logan Waller Page and describes and illustrates Roman, French, gravel, earth and sand-clay, macadam, concrete, brick and other paved roads. Location and alignment, foundation and the macadam and Telford methods of construction are described.

The Fargo Stone & Sand Co., Fargo, N. D., has recently been incorporated by Joseph Ames, Jr., and H. L. Green. The company will enter into the building material business and make a specialty of crushed stone and sand for building purposes.

A. & C. Stone & Lime Company

75,000 Tons MONTHLY

Macadam Crushed Stone

**For road building and
concrete work**

QUARRIES AT

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With the QUARRIES

Locomotive Cranes to Economize Storage

(Fourth Paper)

The study of economizing storage has awakened such widespread interest amongst the men who operate rock crushing plants and sand reclaiming and washing establishments that it seems to be a subject of endless suggestion, and it is surprising how many practical and technical minds have concentrated upon the subject in so nearly the identical basic principles. The solution of the problem is one which has factors of purely local significance to each and every plant that is to be equipped with a storage system.

There is a crushing plant along the main line of the Pennsylvania railroad about the center of the state of Pennsylvania that is provided with a couple of industrial tracks parallel to the main line of the

railroad and about level with the right-of-way, where the quarry operations are located about 200 feet above the rails in a sheer lift. In this plant, where nature, as defined by Sir Isaac Newton, does most of the work, the operation consists of drilling and shooting the rock on a practically level floor and pushing it over the edge of the cliff upon a chute which feeds it into the initial crusher about 20 feet below the quarry floor. The initial crusher in turn spills its product into a dividing chute feeding into several subsidiary crushers, and all of these discharge into a system of chutes which deliver the material into the screen 25 feet below the level of the subsidiary crusher. The screen in turn delivers the separated material into a set of bins,

three sides of which have been cut out of the rock, and only the divisions and one bulkhead had to be built for very large bin capacity. The cars for loading run under the bin, thus the whole plant is laid out in a perpendicular line, the product in process of manufacture being but slightly deflected at very steep angles to feed to the various machines and finally to the bin for discharging into the car.

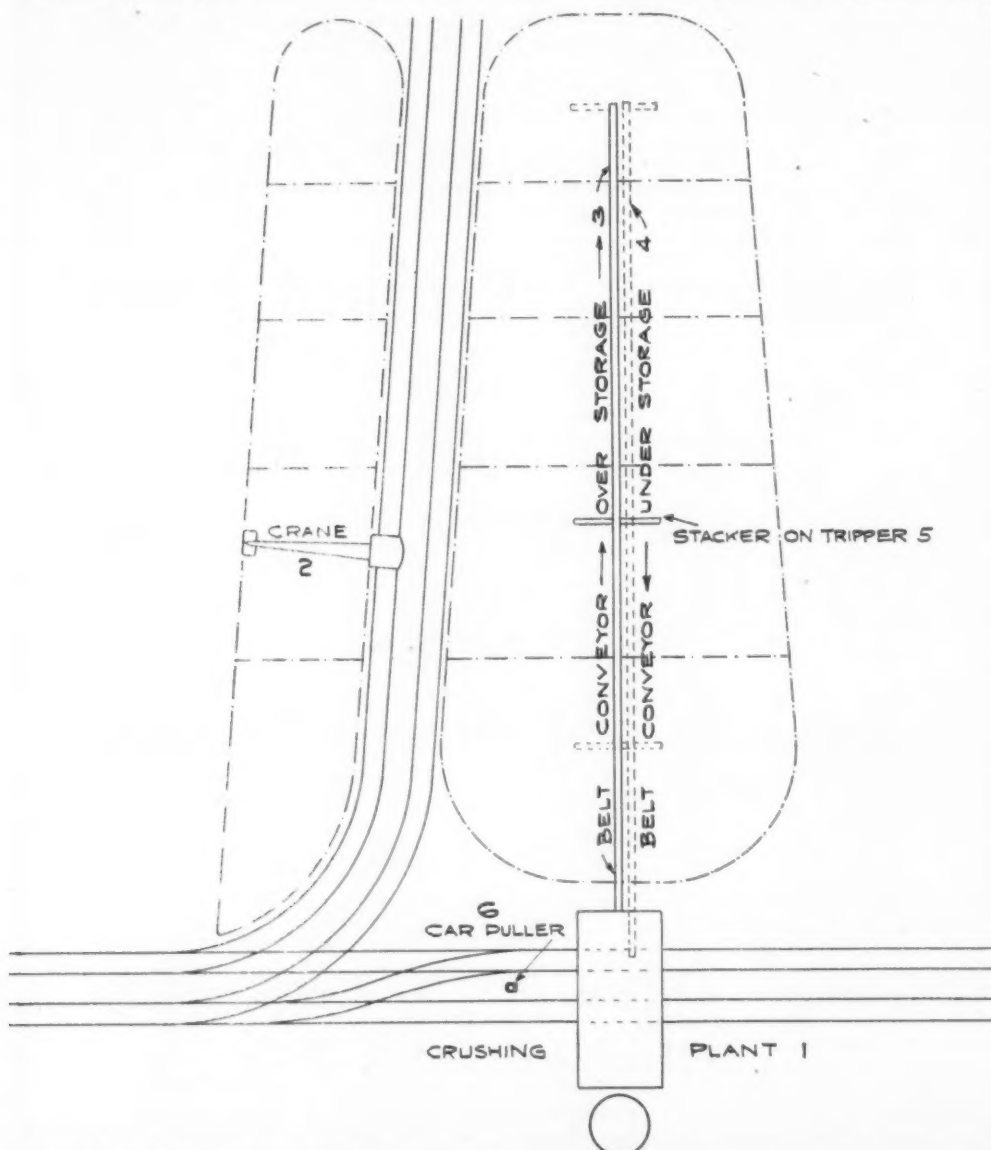
Such a condition has never been known to exist in any other crushing plant, and the only suggested improvement would be to harness the weight of the flowing material in such a way as to derive power from the driving of the belt which gravity would impart in this way and so get rid of the electric motors that are used to drive the crushers and the screen. This is probably the most economically operated crushing plant in the world, and there are very few places indeed where it could be duplicated.

With all of these advantages, however, the plant is altogether incomplete as a financial proposition, for the reason that the development of its sales department must be checked and limited by the storage capacity of the bin, and no matter what the yardage of the bins may be this limitation is the fatal circle that circumscribes the power of the crushing plant to make money along the lines of established commercial usage.

It is true that practically all of the crushing plants now in operation are acquainted with and accustomed to just such a limitation of their operations. The insistent propensity to take orders that are offered which compel the operation of the plant even to the sacrifice of certain sizes that do not meet with ready sale, is the imposing factor of waste that makes anything approaching the accumulation of a large stock on hand the losing element at the sales end of a crushing operation.

Several years ago the grab-buckets that were used in rehandling coal and wet river sand with great efficiency were not adaptable to the handling of crushed rock, for the reason that the lips of the bucket would split and skip so as to get a very small load with each operation of the machine. Such difficulties have in very large measure been overcome, so that there are now buckets which readily pick up a full charge of crushed rock in practically all sizes that are needed in the average demand that comes to the crusher plant. There are also buckets designed and highly efficient for picking up and lifting the rough quarried rock much in the same manner as the steam shovel picks it up. This feature of improvement and availability of the grab-bucket has opened the field for the perfection of the locomotive crane for rehandling, loading and generally economizing extensive storage systems in a most efficient way.

The new equipments of commercial crushing plants will in all future time include a locomotive crane and extensive pile storage of the product of the crusher, so that the maximum of efficiency can be obtained by running the plant steadily without any interference with the screen and carrying a stock which will promptly bring up the aggregate



LAYOUT OF A SUGGESTED STORAGE SYSTEM, THE CAPACITY OF WHICH CAN BE MADE ANY QUANTITY DESIRED.

SAND and GRAVEL

sales of an operative season to the indicated capacity of the initial crusher of the plant.

The low selling price and the extremely high tonnage of the crusher are factors whose importance is only learned and appreciated by experience. We have learned long ago that it is impossible to do any hand shoveling and come out even on the quarry at which crushed rock must be sold and keep up with the march of progress. It is only by the route of equipment that will economize so as to handle several yards with one operation that re-handling can be attempted with any assurance of coming out on the right side of the calculation.

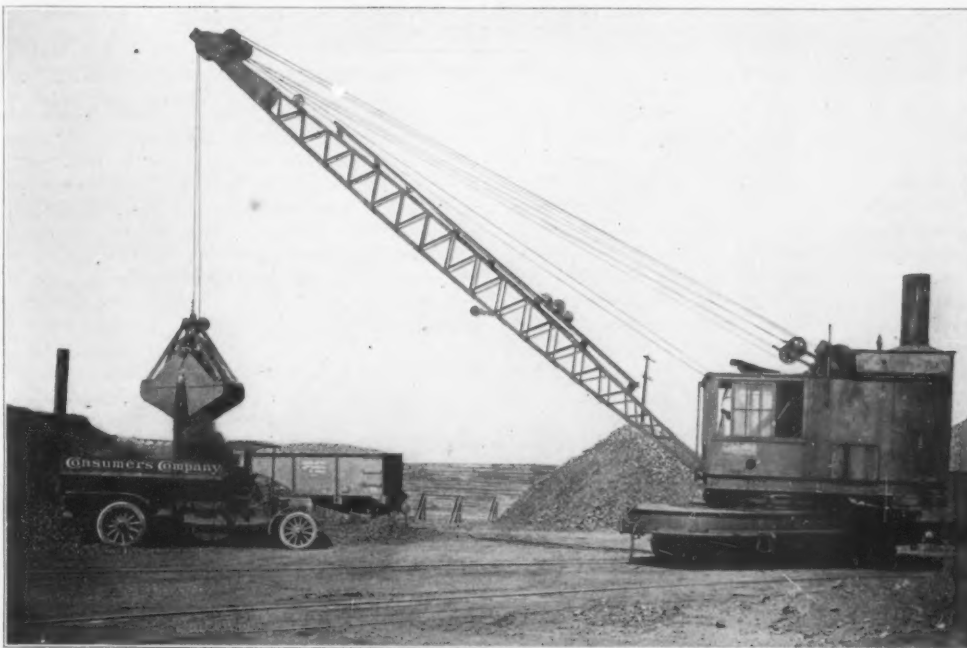
Our illustration this time is the layout of a suggested storage system, the capacity of which can be made any quantity desired. The crushing plant (1) may be such equipment of initial crusher and secondary crushers as may be desired, with the main elevator raising the product of the crusher to a screen which is hung above an intermediary set of bins each having a capacity of approximately 50 to 60 tons. Beneath these intermediary bins is provided a belt conveyor which will draw the material from any one of the bins and carry it out over a trestle to outdoor storage. The locomotive crane (2) works upon an independent track, rehandles the material from the storage pile for loading cars on the track which is parallel to the track on which it runs, or for making additional storage by piling with a full swing on the opposite side of the track on which it is run. The over-storage belt (3) may be any desired length, according to the capacity of the storage deemed amply sufficient for the needs of the plant. It is provided with a stacker on the tripper (5) so that the maximum spread of the apex of the pile can be secured, and divisions or bulk-heads as suggested by the lines crossing the storage pile provide for the maximum use of the space beneath the over-storage belt.

Further suggestion is contained in this layout of the conveyor belt under the storage (4) which will draw from any of the storage piles and directly carry the product back underneath the bin for loading upon cars, which may also be drawing from the bin at the same time. The car-puller (6) is introduced so as to handle the string of leads that accumulate on either of the two tracks running beneath the bin.

Such a plant being fully equipped and with the arrangement of switches and cross-overs as laid out could conveniently be made to load out from storage direct from the bins by means of the locomotive crane, and with the assistance of the under-storage belt and car-puller handle 160 cars in one day.

Realizing that no such quantity is regularly wanted at a crusher plant, the advantage of having such a storage system installed consists chiefly in the fact that with all this immense capacity for loading the cars only a very small force of men are required to accomplish this maximum capacity. It sets the sales force free of the direct operations of the plant, so that the sales manager can select his business with greater care with the certainty that some time in the future, when the sizes that he cannot sell today will be wanted, he will have a large stock of that very thing on hand and ready to load out to the maximum capacity of 150 cars, if necessary, without increasing the payroll or without adding to the cost of regular operations.

This sketch was made by James B. Seaverns, of Chicago, who has given a great deal of study to the economical storage of crushed rock, sand and gravel



THE VERSATILE USE OF THE LOCOMOTIVE CRANE MAKES FOR ECONOMY AND MAXIMUM CAPACITY.

and other cheap materials that are not marketed in bulk. Of course, the sketch applies only to a hypothetical case, for every location has special advantages in the manner of putting such a system of storage into practical operation. Naturally, these local factors have to be made available as assets to the system, and the disadvantages overcome by the study of the particular needs of each case brought forward for improvement in equipment. Our readers are invited to criticize and discuss the various points of excellence or objection to the suggestions contained in this or any of the former drawings that have been published in this series of articles. The purpose of these articles is to develop the best storage system for each and every particular case that requires improvement, so that the most efficient plant, operated in the most economical way, shall earn the largest measure of returns for our friends in the crusher business and, if possible, overcome the worst drawback that has always confronted the commercial feature of producing crushed rock as a staple commodity in the material market of the land.

To bring more personal value into the matter, we cordially invite questions upon the subject of storage and the equipment in detail of such plants and to such questions we will secure the best answers of the best prepared technical minds of this country if it is possible to get such information.

An accompanying illustration shows a 15-ton locomotive crane equipped with a one-and-one-half-yard bucket owned and operated by the Consumers Co., of Chicago, which handles crushed rock, sand and coal at one of their delivery yards. This company has an equipment of a large number of five and eight-ton auto trucks which are loaded as shown in the accompanying illustration, and deliver the product within a radius of 10 miles of the yard at less than half the cost that was formerly attendant to hand loading with team delivery. This locomotive crane is also used for unloading cars of material that come into the yard, a string of cars being

"set in" upon a track that has a slight grade. The locomotive crane travels on another track, unloading the cars and at the same time taking care of the procession of auto trucks and teams that come after various materials stored on this particular yard.

BIG BLAZE IN CALVERT QUARRY.

Two buildings were destroyed and property damaged to the extent of \$15,000 in a recent fire in the G. W. Wynn's Falls Park quarry of the Calvert Quarry Co., Baltimore, Md. The flames, which leaped up into the air above the 125 foot cliff, immediately behind the crushing house, proved an attractive spectacle and drew the attention of thousands of persons who stood on adjacent hills watching the fight against them. Thomas O'Brien, superintendent of the quarry, was on hand shortly after the fire was discovered and directed the firemen in the best way of fighting the blaze. John G. Schwing is president of the Calvert Quarry Co.

TO TRY LIMESTONE IN CUBA.

Suggestions made by Cyril G. Hopkins, Baltimore, Md., as to the use of ground limestone for the enrichment of soils have been adopted by the Cuban Government, which is now familiarizing its agriculturists with the method of using this product in farm cultivation.

Mr. Hopkins is director of agriculture of the Southern Settlement and Development Organization, and is the man whose ideas relating to the enrichment of farm lands have attracted the attention of the Government of Cuba. He has been informed that his pamphlet recently published dealing with this particular subject has been printed in the Spanish language and is to be placed in the hands of all tillers of the soil on the island, and also distributed among agricultural schools.

GYPSUM PRODUCTS

Gypsum in the National Museum

BY CARL W. MITMAN, AID, DIVISION OF MINERAL TECHNOLOGY; M. A. I. M. E.

A hall in the older building of the National Museum at Washington, D. C., has recently been opened to the public, which contains, among others, an exhibit of gypsum and its products, including a model covering an area of 80 square feet, showing a typical occurrence of gypsum, the mining of it, and the manufacture of a variety of gypsum products, constructed accurately to a scale of one-quarter inch to one foot. The exhibit represents one of the first fruits of the most recent organization in the National Museum—that of mineral technology, which was given active recognition as a distinct division about two years ago.

The main purpose of the division is to enlarge popular understanding of the natural resources of

the surface, is shown. The method of mining, namely, room and pillar, is also illustrated. On one corner of the surface workings the vertical shaft is shown, together with the cage loaded with a car in the act of dumping its load of gypsum from the mine into the rock house, which adjoins the shaft. The buildings in which the various operations in the manufacture of gypsum products are carried on are so arranged on the model that the visitor may start at the corner nearest the shaft and by walking from right to left around the model, he may follow the path of the gypsum from the time it emerges from the ground until it is loaded into the box cars labeled "cement plaster" or "plaster board". The side of each building nearest the

will show a bin at the top containing calcined gypsum and also one for hair, sand, and wood fibre, and below a mixing machine, thus giving the visitor some idea of the manufacture of prepared plasters. Connected to the mixing plant by a covered bridge is the plaster board plant, which shows a bin of calcined gypsum and a machine for the manufacture of plaster board. The housing for this part of the process takes up one entire side of the model and includes a drying kiln house and warehouse. Around the corner from the plaster board warehouse is a building housing a plaster bin and machine for the manufacture of plaster partition tile. With this building, the circuit around the model is completed. Filling the spaces in the center of the model are a powder house, sand plant and transforming station, not to mention the ever present water tower.

The low buildings in the foreground in the illustration from right to left are a storeroom and workshop, a wood shredding plant, and the office. To the rear of these and in the same order is the main mill showing the bins and calcining kettle, the mixing plant in the center, and the plaster board plant to the left, extending the length of the adjoining side of the model.

As a supplement to the model, large masses of gypsum rock from various localities are grouped around it on three sides; and on the fourth side is a wall case, a portion of which may be seen on the right side of the illustration, containing specimens of the various ingredients used in the process, together with an array of samples of finished products.

In this wall case, too, a rather novel scheme for explaining, in a non-technical way, just what gypsum is and why it is valuable may be seen. Four objects are arranged on a shelf in the following order; gypsum, water, plaster of Paris, and a block of "set" plaster. To the rear and above these specimens is a large printed label which reads:

Gypsum	+ Heat	= Water + Lime Sulphate
(Lime Sulphate Water)		(Plaster of Paris)
Lime Sulphate	+ Water	= "Set" Plaster
(Plaster of Paris)		(Gypsum)

Thus, from these two simple equations, the lay visitor is able to see in a moment the value of gypsum as a building material, and at the same time see the whole purpose of the manufacturing process.

The keen interest shown and the hearty appreciation of this and other completed exhibits in the division of mineral technology, expressed almost daily by one or more of the host of visitors to the museum has been most gratifying and has resulted in a renewal of efforts toward completing other exhibits, especially those of the cement, lime and plaster industries. It seemed apparent from the outset that the public, whose interest, after all, is the really vital one, might profit by a more adequate grasp of situations in mining and metallurgy. To bring this about, a method was evolved which is expressed in the completed gypsum exhibit, and has proven the correct one, if public opinion may be taken as evidence.

The Acme Cement Plaster Co., St. Louis, Mo., with a capital stock of \$1,000,000, has been granted permission to operate in the state of Texas, with headquarters at Acme, Texas.



MODEL OF U. S. GYPSUM CO.'S PLANT AT OAKFIELD, N. Y., SHOWING BED OF GYPSUM UNDERLYING PLANT AND MINING AND MANUFACTURING METHODS.

the country, and to increase the knowledge of the usability of the products derived. To do this, it was decided to depict each natural resource industry in much the same manner as would be done in an illustrated lecture of the same, but using models accurately reproduced from the field, photographs and transparencies, specimens of the crude material, and finished products, all arranged in sequence and accompanied by descriptive labels. Realizing, however, that those actually engaged in the various natural resource industries were far more competent to arrange a representative series, industrial cooperation was sought, and thus far, with but one exception, has been unreservedly given.

From the very beginning, it has been the aim of the division to make models of actual plants, rather than imaginative ones, and accordingly, after studying the layout of a number of gypsum plants throughout the country, it was decided to use that of the United States Gypsum Co.'s plant at Oakfield, N. Y., which was best suited to the purposes of the division.

The accompanying illustration is a photograph of the gypsum model built in the division workshop from drawings and photographs furnished by the United States Gypsum Co., and illustrates as closely as possible in the eight-by-ten-foot space that company's plant at Oakfield, N. Y. The bed of gypsum rock, which occurs about 75 feet below

visitor is cut away and shows the relative position of each crusher, conveyor, or whatnot of prime importance to the continuous flow of operations, all constructed to a scale of one-quarter inch to one foot. In order to minimize the confusion as to the flow of materials through the plant, which is bound to result otherwise, only one piece of apparatus of each kind is shown; for example, only one calcining kettle can be seen, although in the real plant at Oakfield there are six. This unit system has been used throughout the model and enables the visitor after a little study to have a much clearer understanding of the complete process of manufacture than he could obtain were he to visit the actual plant.

The buildings included on the model, and which contain the interior workings, are the rock house, adjoining the hoisting shaft, where the primary crushing takes place, producing two sizes of crude gypsum, one for calcining and one for use in Portland cement. The former is carried by an inclined belt conveyor to the main mill building, where a secondary crusher is shown, and also a rotary dryer. An inclined bucket elevator raises the dried gypsum to bins over the final crusher, which is shown together with the system of conveyors and spouts which eventually feed the finely crushed gypsum into the calcining kettle. Connected to the main mill and calcining plant by a covered bridge is the mixing plant, which, when completed,

The market place of the building material industry. Employment department, machinery wanted and for sale, etc. If your wants are not answered in this page, write a letter to this office.

THE FRANCIS PUBLISHING CO.
537 S. Dearborn Street Chicago, Illinois

:: THE :: BOURSE

Advertisements will be inserted in this section at the following rates:

For one insertion.....35 cents a line
For two insertions.....45 cents a line
For three insertions.....60 cents a line

Eight words of ordinary length make one line.
Heading counts as two lines.
No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copy of paper containing the advertisement.

EMPLOYMENT WANTED

WANTED—Position as Quarry Superintendent or Accountant. Ten years' experience. Go anywhere. Address Box 1060, care ROCK PRODUCTS AND BUILDING MATERIALS.

WANTED—Position as Superintendent or Assistant in Gypsum Plaster Mill. Good knowledge of manufacturing. Low maintenance, big production. Very successful where present employed. Address Box 1061, care ROCK PRODUCTS AND BUILDING MATERIALS.

ARE YOU LOOKING FOR EMPLOYMENT?

A small advertisement in the Employment column will make your wants known and help you to get a position. No difference what kind of a job you want—advertise in ROCK PRODUCTS AND BUILDING MATERIALS, as the paper is read by the people you want to reach. **QUICK RETURNS.**

EMPLOYEES WANTED

WANTED—To hear from reliable man to take charge of Lime and Stone business as Manager, or become interested with \$5,000 or \$10,000 investment. Address Box "H," care ROCK PRODUCTS AND BUILDING MATERIALS.

HELP! HELP! HELP!

LET US HELP YOU.

We want employers who are looking for good help to advertise in the "Wanted Employees" column, because we know that they will get good results. ROCK PRODUCTS AND BUILDING MATERIALS.

PLANTS FOR SALE

A LIME PLANT FOR SALE, with all necessary buildings, railroad spur and dwellings. Fully equipped and in operation. Has one of the best Agricultural, Chemical and Lime trades in New Jersey, besides a very large trade in lime stone for fluxing purposes. Stone high in Calcium. Within 50 miles of New York City, and on two railroads, making the freight rates very reasonable to New York. An opportunity to make big returns on the investments. Address Box 1055, care ROCK PRODUCTS AND BUILDING MATERIALS.

RAILS

all sizes—small or large lots. New and relaying. We are familiar with quarry requirements and know just what you need. Frogs, switches, splices and all track accessories. Immediate shipment from stock.

L. B. FOSTER CO.

PARK BUILDING

PITTSBURGH, PA

Paper Bags
of
Quality.

For All Purposes

The Jaite Company

Davison, Ohio

Strongest, Most Flexible

BUSINESS OPPORTUNITIES

GOOD OPPORTUNITY.

For an experienced man to engage jointly in sand and gravel business or can lease plant himself. Plenty of orders. Address H. F. A., care ROCK PRODUCTS & BUILDING MATERIALS.

GREEN SLATE PROPERTY.

FOR SALE—In Georgia, immediately on line of L. & N. R. R. (sliding already on property), 50 miles from Alabama. Only known Commercial Slate south of Virginia. Its location and quality should control the markets of the South and Middle West. W. O. WATSON, Charlottesville, Va.

An excellent opportunity for getting results in any of the headings of this page. No matter what it is, we can render you assistance if you will but give us an opportunity.

CEMENT LIME.—Fine quarry limestone, suitable for high-grade cement. Owner leaving State, and will sell this and other valuable property at sacrifice. B. H. COLLIER, Opelika, Ala.

FOR SALE—Wall Plaster Mixing Plant, 25 miles from New York. Ten acres land, sand plentiful, spring water, switch, good buildings and machinery, established business. Address Plaster Plant, care ROCK PRODUCTS AND BUILDING MATERIALS.

WANTED—To correspond with parties desiring to establish a sand lime brick business. Address "S," 455 Van Buren St., Battle Creek, Mich.

MACHINERY FOR SALE

FOR SALE—1 Second Hand No. 5 Style D Gates Crusher at Plant, Aetna Sand & Gravel Co., Algonquin Ill., where it can be inspected. Cheap for quick sale. CHALMERS & WILLIAMS, Chicago Heights, Ill.

FOR SALE—5x5x16 ft. Planer, 24x30 Butterworth and Lowe Jaw Crusher. Address Box 1059, care ROCK PRODUCTS AND BUILDING MATERIALS.

FOR SALE—Best empty cement bag baler, smallest price. Also brick and block machines. Address W. BARTEN, Gordon, Nebr.

Don't Wait

until your old machinery is rusted away;
until the other fellow gets the position;
until it is too late to dispose of your plant;
until many other opportunities have passed.

Send in your requirements TODAY and we will place them before the trade which is interested in such things.

ROCK PRODUCTS AND BUILDING MATERIALS

537 South Dearborn Street, Chicago, Illinois

IMPORTANT!

We ask the co-operation of our advertising patrons in the matter of getting changes of copy for their ad into this office at an early date. Advertising copy for issue of the 7th should be mailed us not later than the 25th of the month preceding. Changes of copy for the 22nd issue should be mailed not later than the 10th of each month. In complying with this request you will permit of a ample time in which to have your ad set and receive proof for O. K., or corrections.

The Francis Publishing Company, 537 So. Dearborn St., Chicago, Ill.

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

CLAY PRODUCTS

N. J. Clay Workers Meet.

With about 175 members present the New Jersey Clay Workers' Association held its summer meeting at Trenton on June 21, in the auditorium of the School of Industrial Arts. Although formed only a year ago, this organization has progressed rapidly, as was demonstrated by the large attendance, which gathered to discuss problems affecting the interest of potteries and other industries in which clay is used for manufacturing purposes. Trenton was selected as the convention point because of its location in the center of the clay industry of the state.

The morning session was occupied with a meeting of the executive committee, at which matters of a routine nature were transacted. The members of the committee are: Charles S. Maddock, Jr., and R. K. Bowman, of Trenton; Able Hansen, Guy Weaver, H. A. Plusch, of Perth Amboy; Charles H. Cook and E. C. Stover, of Trenton; A. S. Reed, of Newark; Hubert Somers, of Atlantic City; H. Valentine, of Woodbridge; Charles Weelans, of Trenton; D. J. Fisher, of Sayreville; H. C. Mehroff, of Little Ferry; James D. Avery, of Cliffwood; D. R. Edgar, of Metuchen.

The officers of the association are: President, Charles A. Bloomfield, Metuchen; vice-president, John Maddock, Trenton; secretary and treasurer, C. W. Parmelee, New Brunswick. New officers will be elected at the annual meeting to be held in Trenton in December.

Mayor Donnelly gave an address of welcome and Frank Forrest Frederick, director of the school, spoke at the opening of the session in the afternoon. In addition to the addresses programmed, talks were given during the afternoon by Herman C. Mueller, president of the Mueller Mosaic Art Tile Co.; T. A. Randall, of Indianapolis, Ind., secretary of the National Brick Manufacturers' Association, and President Charles Bloomfield.

OHIO BRICK MEN MEET.

Members of the Ohio Face Brick Association assembled at the Chittenden hotel, Columbus, Ohio, on Tuesday, June 29, in a regular meeting.

BRICK MEN TO MEET AT DETROIT.

The mid-summer meeting of the American Face Brick Association will be held at the Statler hotel, Detroit, Mich., July 15 and 16.

BRICKMAKERS GO ON STRIKE.

Employees of all the brickyards save one along the river front at Haverstraw, N. Y., which is one of the main sources of supply for the New York City market, refused to go to work when the whistles blew at 3:30 o'clock on the morning of June 21. With the exception of the Excelsior Brick Yards, where enough men reported to operate one of their twelve machines, not a wheel was turned along the seven miles of brickyard extending from Hook Mountain to the Stony Point Lighthouse. Between 2,000 and 3,000 men are idle.

A week previous the manufacturers notified all the men by placards that on and after June 21 the output of each machine would be increased by 2,000 bricks, making a total of 24,000 to each machine, in order to compete with up-river manufacturers.

As a result of the burning of the barn in the yards of George Archer a loss of \$2,000 or more was incurred. The strikers are suspected and all yards will be well guarded from now on. Many of the men are negroes brought from the South.

There seems to be no sign of a settlement, as both manufacturers and men are firm. The manu-

facturers say they will either put out the extra amount of brick or else close down their yards for the season. The men are just as firm in saying they will never give in.

The belief now seems to prevail on the Building Material Exchange at New York City that the brick market is due for a substantial advance in price.

Greater Value and Higher Ethics in Advertising

The Eleventh Annual Convention of The Associated Advertising Clubs of the World Held at Chicago.

We believe in truth, the corner-stone of all honorable and successful business, and we pledge ourselves each to one and to all to make this the foundation of our dealings.

"The Army of the Simple Truth" is the name that has been applied to the Associated Advertising Clubs of the World. It is a mighty army—an army of forward looking business men who are marching on toward better things in business. They seek to make business better, easier and pleasanter—and to make business a better servant of the people as a whole.

The Eleventh Annual Convention of The Associated Advertising Clubs of the World was held June 20 to 26 at the Auditorium and Congress hotels, Chicago. With an attendance of over 5,000 men and women, gathered from all parts of the world, the meeting will go down in history as one of the greatest forces of business advancement that has ever been convened. The meetings of the convention were all of the most inspirational character and the addresses and information, which were so generously offered, will be a help to advertising and to business for many years to come.

The great convention was opened on Sunday, June 20, in the churches of Chicago by lay speakers from the visitors, who addressed nearly 50 congregations on the higher ideals of business and advertising. On Monday night the greatest pageant ever witnessed by the city of Chicago marched down Michigan boulevard and State street, visualizing some of the ideals and achievements of the advertising fraternity.

The remainder of the week was occupied with the general and departmental meetings. Addresses by such well known men as the Hon. Joseph E. Davies, chairman of the Federal Trade Commission, Washington, D. C.; Hon. William Hale Thompson, mayor of Chicago; President Charles R. Van Hise of the University of Wisconsin; Hon. Henry D. Estabrook, of the New York bar; Hon. John H. Fahey, president of the Chamber of Commerce of U. S. A., and many others illustrated the importance that business and professional men placed upon the gathering.

Departmental meetings were held throughout the week by the various divisions, including the advertising agents, agricultural publishers, retail advertisers, business and trade press, magazine and outdoor advertising.

Among the most interesting addresses at the various departmental meetings were the following: "Value and Necessity of Circulation Audits from the Advertisers' Standpoint," O. C. Harn, advertising manager National Lead Co., New York City; "Great Britain After the War," John S. Hart, honorary secretary, British Association of Advertising Clubs, London, England; "How to Find Out if a

House Organ for Consumers Pays," W. A. Fuchs, Lehigh Portland Cement Co., Allentown, Pa.; "How and Where to Get Material for a House Organ for Dealers," F. G. Eastman, Packard Motor Car Co., Detroit, Mich.; "How Can House Organ Editors Best Help One Another," Charles H. Mackintosh, advertising manager, Clyde Iron Works, Duluth, Minn.; "What Advertising Has Done for My Business," George M. Brown, president, General Roofing Manufacturing Co., East St. Louis, Ill.

An elaborate exhibit was maintained at the Congress hotel to illustrate the importance and value of the various phases of advertising and their adaptability to selling. One of the most interesting and instructive divisions of the exhibit was that of the trade press. By the use of charts and statistics a number of statements that have been occasionally made against the trade papers were clearly and definitely refuted, and the trade press was visualized in its true light as a real business builder. Among the more important facts illustrated were the following:

The estimated proportion of trades people reading one or more trade papers is 61 per cent—the estimated total circulation of trade and business papers is 6,103,000—percentage of field covered by the average trade paper is 65 per cent—number of advertisers in trade paper field contrasted with number in general advertising field is: trade paper advertisers, 81,500; general advertisers, 6,500—editorial expense, showing how some high-grade trade papers spend more on editing than most magazines, is as follows: high-grade trade papers, \$70,000; high-grade general magazines, \$50,000—17 per cent of the public are the specialized interests represented by the trade papers—percentage of firms advertising in trade papers which take space in every issue is 65 per cent—the production cost of business papers far exceeds subscription price (only live buying factors are actively sought as subscribers), as is illustrated by the following: average valuation of subscribers to trade papers being \$20.50, and average yearly receipts being \$1.69.

The convention proper was brought to a close on Thursday evening, June 24, with the turning over of the president's gavel by the retiring executive, William Woodhead, of San Francisco, to Herbert S. Houston, vice-president of Doubleday, Page & Co., of New York City. Philadelphia was chosen as the place of the next meeting.

The results of this convention to the business men of the country lie in the fact that advertising has been brought out in a clearer and truer light than ever before, as an honorable and ethical branch of business, as being represented by men with high standards; and illustrating even more forcefully that its definite value can be analyzed by students of salesmanship, that it is a business necessity and has no equal in the selling field.

"Built for Service"



INCREASE your storage facilities; DECREASE your handling costs
You can do it with this crane

Endorsed by a man prominent in the quarry field as "The most efficient crane I have ever seen."

C. R. S. Locomotive Crane

— 4 ESSENTIAL POINTS THAT COUNT —

**POWER
SPEED**

**ACCESSIBILITY OF PARTS
SIMPLICITY OF CONSTRUCTION**

8 additional reasons why this Crane will solve your material storage and handling problems and **increase your profits.**

1. Unusual heavy and rigid construction.
2. Large lifting capacities with corresponding factors of safety.
3. Low center of gravity.
4. Large engines for hoisting and traveling.
5. Separate engine for swinging.
6. Most efficient, simple and easily adjusted clutches.
7. Universal joint, travel mechanism.
8. Low cost of operation, maintenance, etc.

IMMEDIATE SHIPMENT ON CRANES 15 TO 30 TONS CAPACITY (Standard M. C. B. equipped)

Let us show you how to economize your storage. Write us your individual problems and for our suggestions as to how to solve them. Ask for Catalog No. 5 when you write.

THE CLEVELAND RAILWAY SUPPLY COMPANY
CLEVELAND, OHIO

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

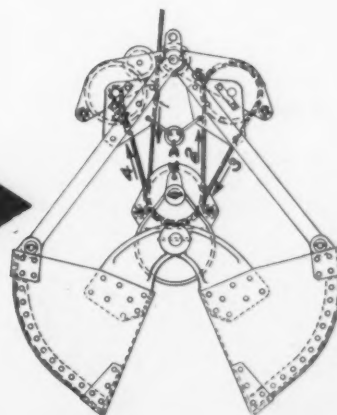
ECONOMY AND EFFICIENCY

in the handling of Rock, Sand and Gravel, Clay, etc.



Are you handling your materials as economically and efficiently as possible? Have you studied carefully the various types of buckets and compared them with the "Lakewood" Bucket?

The "Lakewood" Clam Shell Bucket is the result of 18 years of manufacturing experience—a powerful and efficient bucket, that will work well and pay well under all conditions of service.



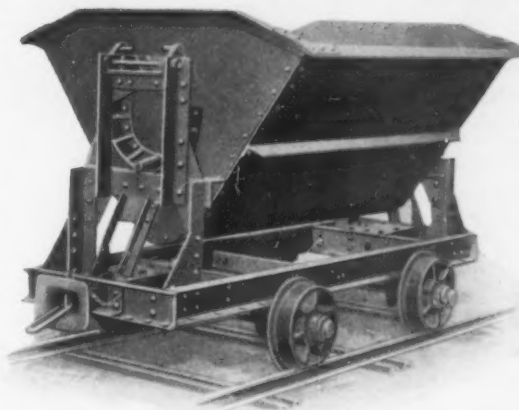
The value of an excavating bucket depends upon its ability to take a large load at each grab and to open and close quickly, thus giving great working capacity. It has been repeatedly proven that the "Lakewood" Bucket has far greater working capacity than any other bucket, regardless of type!

"THE LAKEWOOD LINE"—BUILT TO LAST

THE experience of this Company in small steel cars for industrial and quarry use has been one of continued specialization for 18 years. The trademark, "Built to Last," has been adopted as the distinguishing feature of the "Lakewood" cars.

Manufactured in all sizes and types—of the most durable materials possible and strongly designed for the particular purpose.

Lakewood Catalog No. 16 is devoted exclusively to showing many of the interesting types of quarry cars.



The Company invites the trade to call upon the Consultation Service of our Engineering Department for suggestions as to the design and installation of equipment. Give as much information as possible regarding the conditions under which you are operating, the kind of material to be handled, etc. We will give you the benefit of our experience and furnish specific information as to what Lakewood Buckets and Cars are doing under conditions similar to yours.

THE LAKEWOOD ENGINEERING CO.

CLEVELAND

NEW YORK
Brown & Sites Co.,
30 Church St.

BALTIMORE
Munsey Building

PITTSBURGH
1230 Fulton Building

CHICAGO
506 S. Canal St.

KANSAS CITY
909 N. Y. Life Bldg.

The Ohio Ceramic Engineering Co.
The Electric Locomotive & Car Co.

SUCCEEDING
The Cleveland Car Co.

The Pittsburgh Dryer Co.

The Industrial Car Co.

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS

CLASSIFIED BUSINESS DIRECTORY

BAGS AND BAG TYERS.

Faerberhill Mfg. Co. (bag tyers).
Jalte Company, The.
Urschel Bates Valve Bag Co.

BELTING.

H. W. Caldwell & Co.
Chain Belt Co.
Dull & Co., R. W.
Goodrich Co., B. F.
Imperial Belting Co.
Link Belt Co.
Revere Rubber Co.
Stephens-Adamson Mfg. Co.
Webster Mfg. Company.
Weller Mfg. Co.

BRICK.

Belden Brick Co.
Metropolitan Paving Brick Co.

BRICK CLAMPS.

The P. D. Crane Co.

BRICK PAVING.

Metropolitan Paving Brick Co.

BUCKETS, DUMPING AND GRAB.

Atlas Car & Mfg. Co.
H. W. Caldwell & Co.
Haiss Mfg. Co., Inc., Geo.
Hendrick Mfg. Co.
Lakewood Engineering Co.
Link Belt Co.
McMyler-Interstate Co.
Standard Bucket Co.

CABLES.

American Steel & Wire Co.
Dull & Co., R. W.
Sauerman Bros.

CALCINING MACHINERY.

Atlas Car & Mfg. Co.

CARS, INDUSTRIAL.

Atlas Car & Mfg. Co.
Austin Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Lakewood Engineering Co.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

CASTINGS.

Allis-Chalmers Mfg. Co.
Traylor Eng. & Mfg. Co.

CEMENT, CAEN STONE.

Cleveland Bldrs' Supply Co.

CEMENT, HYDRAULIC.

Carolina Portland Cement Co.

CEMENT, PORTLAND.

Alpha Port. Cement Co.
Atlas Portland Cement Co.
Carolina Portland Cement Co.
Chicago Portland Cement Co.
Cincinnati Portland Cement Corp.
Copley Cement Mfg. Co.
Crescent Portland Cement Co.
Huron-Wyandotte Port. Cement Co.
Kansas City Portland Cement Co.
Lehigh Portland Cement Co.
Marquette Cement Mfg. Co.
Northwestern States Portland Cement Co.
Ohio & Western Lime Co.
Phoenix Portland Cement Co.
Sandusky Portland Cement Co.
St. Louis Portland Cement Works.
Union Sand & Material Co.
Whitehall Portland Cement Mfg. Co.
Wolverine Portland Cement Co.
Woodville Lime & Cement Co., The.

CHAINS.

Chain Belt Co.
Jeffrey Mfg. Co.
Link Belt Co.

CLAYWORKING MCHY.

American Clay Mch. Co.
Bartlett, C. O., & Snow Co.

COAL CHUTES.

Kewanee Mfg. Co.

COLORINGS DRY AND MORTAR.

Samuel Cabot.
Calvert Mortar Color Wks.
Chattanooga Paint Co.
Clinton Metallic Paint Co.
Ricketson Mineral Paint Works.
Williams, C. K., & Co.
Woodville Lime & Cement Co.

COMPRESSORS.

Allis-Chalmers Mfg. Co.
Clayton Air Compressor Co.

CONCRETE MIXERS.

Chain Belt Co.
Cement Tile Mach. Co.
Jaeger Mach. Co.
Lakewood Engineering Co.
Miscampbell, H.
Power & Mining Mach. Co.

CONCRETE REINFORCEMENT.

American Steel & Wire Co.

CONSULTING GEOLOGISTS.

Grimsley, G. P., Ph. D.
Hunt, Robt. W., & Co.

CORNER BEADS.

Bostwick Steel Lath Co., The.
Canton Metal Ceiling Co., The.
North Western Expanded Metal Co.
Sykes Metal Lath & Roofing Co.

CRANES—LOCOMOTIVE AND GENTRY.

Cleveland Ry. Supply Co.
Link Belt Co.
McMyler-Interstate Co.

CONVEYORS AND ELEVATORS.

Allis-Chalmers Manufacturing Co.
Atlas Car & Mfg. Co.
Austin Mfg. Co.
Bartlett, C. O., & Snow Co.
Caldwell, H. W., & Sons Co.
Chain Belt Co.
Dull, Raymond W., & Co.
Ehram, J. B., & Sons Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Manufacturing Co.
Link Belt Co.
McMyler-Interstate Co.
McLanahan Stone Machine Co.
Manierre Eng. & Mach. Co.
Power & Mining Mach. Co.
Stephens-Adamson Mfg. Co.
Toepfer, W., & Son.
Webster Mfg. Company.
Weller Mfg. Co.

CRUSHED STONE.

A. & C. Stone & Lime Co.

CRUSHERS AND PULVERIZERS.

Allis-Chalmers Manufacturing Co.
American Pulverizer Co.
Austin Mfg. Co.
Bacon, Earl C.
Bartlett, C. O., & Snow Co.
Bonnot Co., The.
Bradley Pulverizer Co.
Butterworth & Lowe.
Chalmers & Williams.
Ehram, J. B., & Sons Mfg. Co.
Jeffrey Manufacturing Co.
K-B. Pulverizer Co.
Kent Mill Co.
Lewistown Foundry & Machine Co.
McLanahan Stone Machine Co.
Pennsylvania Crusher Co.
Power & Mining Mach. Co.
Raymond Impact Pulverizer Co.
Sturtevant Mill Co.
Traylor Eng. & Mfg. Co.
Webb City & Carterville F. & M. Wks.
Williams Pat. Crusher & Pulverizer Co.

DRAIN TILE.

American Clay Co.
Vigo-American Clay Co.

DRILLS.

Loomis Machine Co.

DRYERS.

American Process Co.
Bartlett, C. O., & Snow Co.
Link Belt Co.
Ruggles-Coles Eng. Co.

ENGINEERS.

American Process Co.
Bacon, Earl C.
Buckbee Co., J. C.
Duff Patents Co., Inc.
Dull, Raymond W., & Co.
Fuller Engineering Co.
Grimsley, G. P.
Hunt, Robt. W., & Co.
Improved Equipment Co.
Meade, R. K.
Sauerman Bros.
Schaffer Eng. & Equip. Co.
Smidth & Co., F. L.
Stephens-Adamson Mfg. Co.
Traylor Eng. & Mfg. Co.
Yates, P. K.

ENGINES.

Allis-Chalmers Mfg. Co.
Power & Mining Mach. Co.

EXCAVATORS.

Buckbee Co., J. C.
Raymond W. Dull Co.
Haiss Mfg. Co., Inc., Geo.
Indianapolis Cable Excavator Co.
Link Belt Co.
McMyler-Interstate Co.
Sauerman Bros.
Weller Mfg. Co.

FIRE BRICK.

Carolina Portland Cement Co.
Improved Equipment Co.
Thornton Fire Brick Co.

FLOOR HARDENER.

Ceresit Waterproofing Co.

FURNACES FOR SPECIAL PURPOSES.

Improved Equipment Co.

GAS PRODUCERS.

Improved Equipment Co.

GATES.

Haiss Mfg. Co., Inc., Geo.

GEARS.

Caldwell, H. W., & Son Co.
Chain Belt Co.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

GLASS SAND MACHINERY.

Lewiston Fdy. & Mach. Co.

GYPNUM BLOCK.

American Cement Plaster Co.
U. S. Gypsum Co.
Plymouth Gypsum Co.

GYPNUM—PLASTER.

American Cement Plaster Co.
Best Bros. Keene's Cement Co.
Cardiff Gypsum Co.
Carolina Portland Cement Co.
National Mortar & Supply Co.
Ohio & Western Lime Co.
Plymouth Gypsum Co.
U. S. Gypsum Co.
Wheeling Wall Plaster Co.

HAIR.

Ohio & Western Lime Co.

HOISTS, ELECTRIC AND STEAM.

Allis-Chalmers Mfg. Co.
Buckbee Co., J. C.
Link Belt Co.
Haiss Mfg. Co., Inc., Geo.

HOLLOW CLAY TILE.

American Clay Co.
Metropolitan Paving Brick Co.
Vigo-American Clay Co.

HYDRATING MCHY.

Atlas Car & Mfg. Co.
Kritzer Co., The.
Miscampbell, H.

LIME.

Carolina P. C. Co.
Kelley Island Lime & Trans. Co.
Mitchell Lime Co.
National Lime & Stone Co.
National Mortar & Supply Co.
Ohio & Western Lime Co., The.
Owens & Son, John D.
Scioto Lime & Stone Co.
Woodville Lime & Cement Co.

LIME, HYDRATED.

Kelley Island Lime & Transport Co.
Mitchell Lime Co.
National Lime & Stone Co.
National Mortar & Supply Co.
Ohio & Western Lime Co., The.
Scioto Lime & Stone Co.
Woodville Lime & Cement Co., The.

LIME KILNS.

Atlas Car & Mfg. Co.
Improved Equipment Co.

LOADERS AND UNLOADERS.

Ambursen Company.
Chain Belt Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link Belt Co.
Manierre Eng. & Mach. Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

LOCOMOTIVES.

Davenport Locomotive Wks.

MANGANESE STEEL.

Allis-Chalmers Mfg. Co.
Link Belt Co.
Taylor-Wharton Iron & Steel Co.

METAL LATH.

Bostwick Steel Lath Co.
Carolina Portland Cement Co.
North Western Expanded Metal Co.
Sykes Metal Lath & Roofing Co.
Trussed Concrete Steel Co.

MOTOR TRUCKS.

Kissel Motor Car Co.
Pierce-Arrow Motor Car Co.

PAINT AND COATINGS.

Cabot, Samuel.
Calvert Mortar Color Wks.
Canfield Oil Co.
Ceresit Waterproofing Co.
Chattanooga Paint Co.
Gordon-Hittl Co.
Ricketson Mineral Paint Co.
Williams, C. K., & Co.

PEBBLES.

Canada Pebble Co.

PERFORATED METALS.

Allis-Chalmers Mfg. Co.
Johnson & Chapman.
Hendrick Mfg. Co.
Toepfer, W., & Son.

PLASTER.

See Gypsum.

PLASTER BOARD.

American Cement Plaster Co.
Plymouth Gypsum Co.
U. S. Gypsum Co.

PLASTER BOND.

Ceresit Waterproofing Co.

PLASTER MCHY.

Butterworth & Lowe.
Dunning, W. D.
Ehram, J. B., & Sons Mfg. Co.
Miscampbell, H.
Williams Pat. Crusher & Pulverizer Co.
PREPARED ROOFING—SHINGLES.
Carolina Portland Cement Co.
Reynolds Asphalt Shingle Co.

PUMPS.

Allis-Chalmers Mfg. Co.
International Steam Pump Co.

QUARRY CARS.

See Cars.

ROAD MACHINERY.

Austin Mfg. Co.
Troy Wagon Works.

ROOFING-METAL.

Sykes Metal Lath & Roofing Co.

SAND.

Union Sand & Material Co.

SAND AND GRAVEL WASHING PLANTS.

Dull & Co., Raymond W.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Webster Mfg. Co.
Weller Mfg. Co.

SAND LIME BRICK MACHINERY.

Amer. Clay Machy. Co.

SCALE CARS.

Atlas Car & Mfg. Co.

SCREENS.

Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Butterworth & Lowe.
Chain Belt Co.
Dull & Co., Raymond W.
Ehram, J. B., & Sons Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Hendricks Mfg. Co.
Johnston & Chapman Co.
Link Belt Co.
McLanahan Stone Machine Co.
Power & Mining Mach. Co.
Stephens-Adamson Mfg. Co.
Sturtevant Mill Co.
Toepfer, W., & Son.
Webster Mfg. Company.
Weller Mfg. Co.

SECOND-HAND MACHINERY.

Bourse.

SEWER PIPE.

Houston Bros. Co.
Plymouth Clay Products Co.

SHEAVES, BLOCKS AND VALVES.

Haiss Mfg. Co., Inc., Geo.

SINK AND FLOAT TESTERS.

Pennsylvania Crusher Co.

SPREADERS, ROAD.

Troy Wagon Wks. Co., The.

STEAM SHOVELS.

Marion-Osgood Co.
Thew Automatic Shovel Co.

STUCCO RETARDER.

National Retarder Co.

TRAILERS, TRACTORS AND MOTOR TRUCKS.

Troy Wagon Wks. Co., The.

TRAMWAYS.

Ambursen Company.
American Steel & Wire Co.
Link Belt Co.

TUBE MILLS.

Allis-Chalmers Manufacturing Co.
Power & Mining Mach. Co.
Smidth & Co., F. L.

WAGONS—DUMP AND REVERSIBLE.

Troy Wagon Wks. Co., The.

WALL PLUGS AND TIES.

Bostwick Steel Lath Co.
Sykes Metal Lath & Roofing Co.

WATERPROOFING.

Cabot, Samuel, Inc.
Canfield Oil Co.
Carolina Portland Cement Co.
Ceresit Waterproofing Co.
General Fireproofing Co., The.
Hercules Waterproofing Cement Co.
Sandusky Portland Cement Co.

WEIGHING MACHINES.

Automatic Weighing Machine Co.
Schaffer Eng. & Equip. Co.
Sturtevant Mill Co.

WIRE AND WIRE FENC'NG.

American Steel & Wire Co.

WIRE ROPE.

American Steel & Wire Co.
Buckbee Co., J. C.
Leschen, A., & Sons Co.

Tell 'em you saw it in ROCK PRODUCTS AND BUILDING MATERIALS



A Little Editorial on U. S. G. Products and Service

In your business, as a builders' supply merchant, it is the capital that turns itself over **RAPIDLY** that makes you the most profit. The goods most quickly sold are those of recognized reputation—**ADVERTISED PRODUCTS**—and when offered to your customer he is disposed to buy.

Selling unknown goods, unadvertised goods, is up-hill work. More effort on your part is required, your selling expense is necessarily greater.

Just consider that marketing U. S. G. Hard Wall Plasters, Sackett Plaster Board and other U. S. G. products is like rolling a large wheel down hill. It requires only an initial push to "start things going." Our Advertising Department and Dealers' Service Bureau will lend you a hand and put their shoulder to the wheel **FOR YOUR BENEFIT**. We do not solely depend upon the dealers salesmanship but we back him up—**WORK WITH HIM**—and blaze the trail.

In selling U. S. G. products you not only get the best of materials but you also get **STEAM BEHIND THEM** in promoting sales.

There has been a lot of talk about co-operation between manufacturer and dealer. A large portion of this "co-operation" is in itself nothing but talk. Now we want to show you just what **OUR IDEA** of service is.

Write us for particulars—it is a matter of increased sales and profit to you

United States Gypsum Co.

The World's Largest Producers of Gypsum Products

NEW YORK

CLEVELAND

CHICAGO

MINNEAPOLIS

KANSAS CITY

SAN FRANCISCO



As the Trade Ordains

Red Ring Portland Cement

Quantity

Service

Quality



Above Standard

Specification

Requirements

Thru The Dealers

SALES

OFFICE:

St. Louis Portland Cement Works

LIGGETT BUILDING

St. Louis, Mo.

Tell 'em you saw it in **ROCK PRODUCTS AND BUILDING MATERIALS**